

# SUCCESS WITH SHEEP



MANAGEMENT OF SHEEP.  
RAM BREEDING. . . . .  
THE SHEPHERDS' YEAR.

PRACTICAL EXPERIENCE.  
DENTITION. . . . .  
COMMON DISEASES. . .

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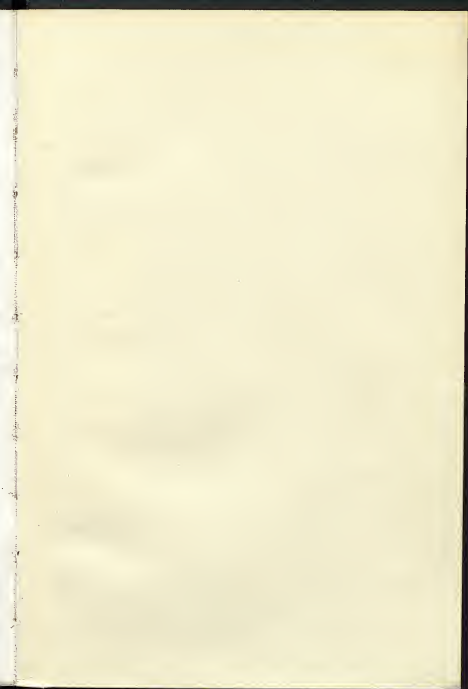


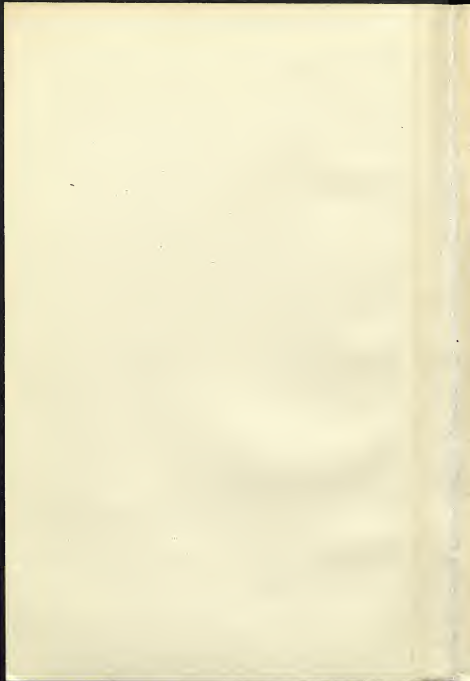
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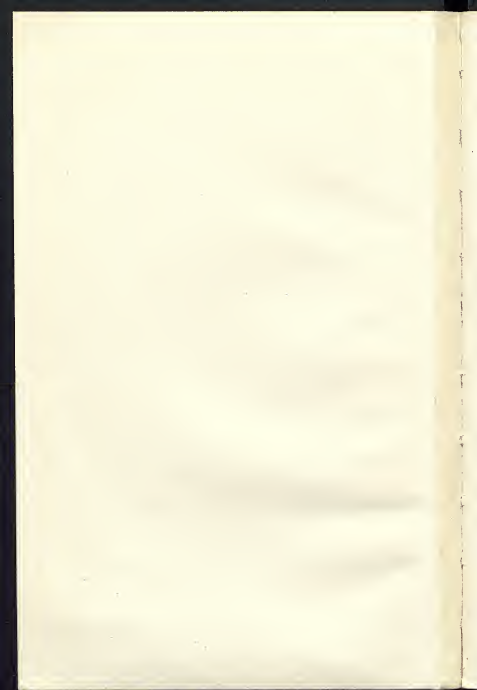
# SHEEP

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Ram Breeding.  
The Shepherd's Year.

Practical Experience.  
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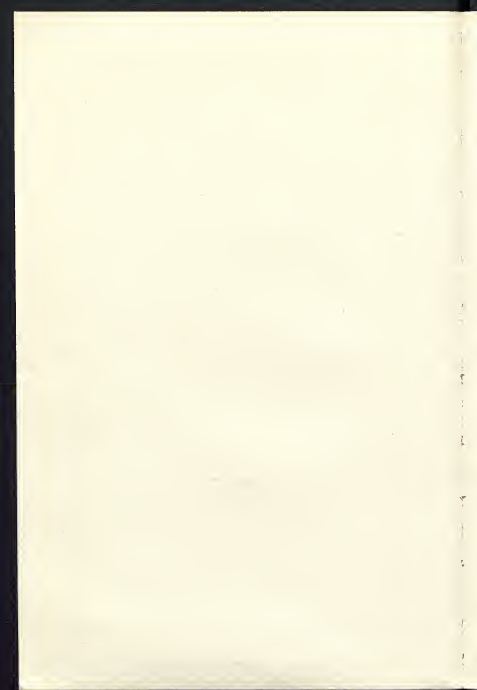


## PREFACE.

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THE success which has attended the concise hand-books on rural subjects, issued in connection with the *Farm Field and Fireside*, leads us to hope that the present volume, "Success with Sheep," will be received with favour by the public. It does not pretend to deal with the subject exhaustively, but an endeavour has been made to give a short account of "Sheep Management in Great Britain," and from its pages we hope that many hints will be gleaned which will prove useful to those who go in for keeping Sheep.

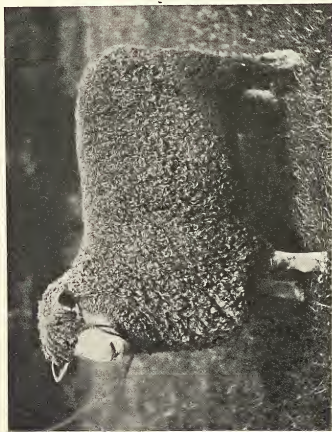
A large portion of the book is from the pen of a well-known authority in sheep matters, while the remainder has been adapted from the articles which have appeared in *Farm Field and Fireside*.



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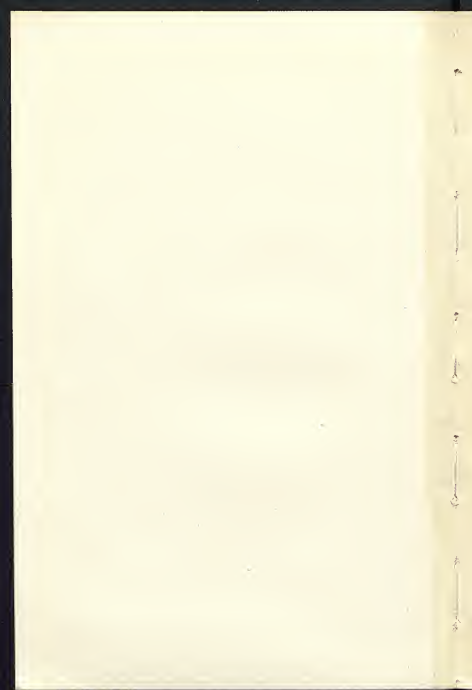
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*Photo by*

LINCOLN LONGWOOL RAM.

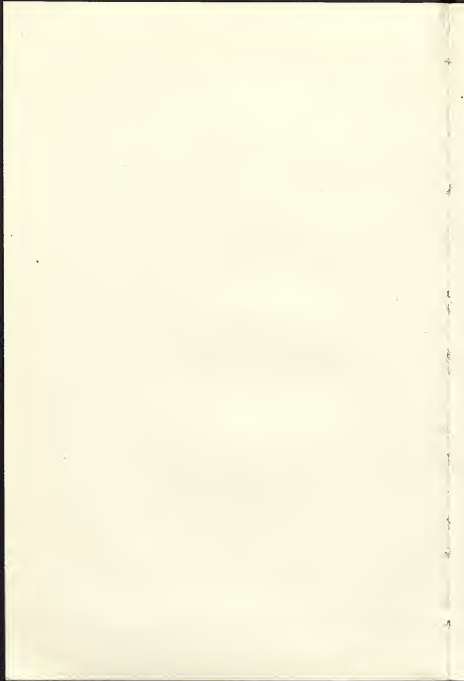
[G. H. Parsons.]



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# SUCCESS WITH SHEEP.

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## CHAPTER I.

### BRITISH SHEEP BREEDING.

#### THE SHEEP.—ITS IMPORTANCE IN FARMING.

OF all the animals which have been pressed into the service of man none has been so useful as the sheep. To write its history would be almost to write the history of the human race. From time immemorial it has been the humble servant of man.

In the most primitive stages of agriculture, before in its literal sense agriculture was practised, the sheep was bred and tended, and in the latest developments of the art of tilling the land in the most scientific and effectual manner, the sheep forms an important factor. Thus in its most crude and in its most complete forms agriculture may be said to be dependent upon the sheep.

The actual source from whence the domesticated sheep as we know it—in its numerous varieties—originated, has long been the subject of controversy, and it would not be of any practical advantage to discuss the vexed question.

It is certain, as already observed, that in its

tamed state the sheep has been known from the earliest times of which we can find records. The reference to it in the Old Testament will be familiar to all. That the art of breeding was considerably advanced we know from the story of Jacob, who must have understood its principles as well as any flockmaster of the twentieth century. We read too in *Genesis* that "Laban went to shear his sheep" (xxxii., 19), and that "Judah was comforted and went up unto his sheep-shearers at Zimnath," from whence we see that the regular use of the fleece for clothing was practised, and that the sheep were shorn as at present.

In its wild state—and there are still specimens of wild races to be found in some parts of the world—the sheep is as well able to take care of itself, and defend itself, as other animals. Its helplessness is, therefore, another evidence of the long period during which it has been bred in domestication. It has been rendered more suited to the requirements of man, but, at the same time, its physical powers and natural instincts have degenerated and, if left without human protection, it easily falls a prey to wolves and other enemies.

In Asia, which may be said to be the cradle of the domesticated races of sheep, there are found two main groups of cultivated sheep, each including numerous breeds—viz., those with flat tails,

naked underneath, and those with long round tails covered with wool.

In Africa, also, numerous varieties of sheep have been known from time immemorial.

In Europe every country has its different kind or breeds, and we find evidence of their presence as early as we find traces of man. We know that long before the Christian era they were kept in Spain, and in North Britain remains of the old Celtic sheep have been found.

In the South of Europe it may be supposed that the sheep of Asia, and possibly of Africa also, were intermixed with indigenous races. They would find their way from Asia into Greece with the introduction of civilization and letters. The sheep of Arcadia became the boast of Greece, and many allusions in the writings of Greek poets and historians show the high estimation in which sheep were held.

Italy possessed sheep from an unknown period, but the inhabitants seem to have cultivated the goat in preference. Long after Rome was founded, the inhabitants had not learned to shear the fleece, and until the time of Pliny, the practice of plucking it from the skin was not wholly abandoned, so long—as Low observes—had the humble shepherds of Syria preceded, in their knowledge of necessary arts, the future conquerors of their country.

Of all the countries of Europe, Spain has been

the longest distinguished for its sheep. Its varied surface and natural productions induce a diversity of breeds, from the larger animals of the rich plains to the smaller races of the higher mountains and arid country. Besides the natural differences thus caused, the diversity of character may be assumed to have been increased by successive importations by the nations which have possessed the Peninsula at different periods. But the best of the whole were gradually concentrated in the breed which became, and still is, the most famous and the most numerous in the world, viz., the Merino.

There is a tradition, based on allusions in some of the early English historians, that this breed was derived, or at any rate, improved by the introduction of Cotswold rams from this country. Thus Stow, in his *Chronicles*, states that in 1464 King Edward IV. "gave a liscence to pass over Certain Sotteswolde sheep into Spain," and Baker says, "King Edward IV. enters into a league with John, King of Arragon, to whom he sent over a score of Costal ewes and four rams, a small present in show, but great in the event, for it proved of more benefit to Spain, and more detrimental to England, than could at first have been imagined." These early writers, however, appeared to be unaware that at that time Spain already produced the best wool, and manufactured the finest woollen fabrics in Europe.

It is not difficult to trace a resemblance between some English breeds, notably the Dorset Horns, to the Merino, and in this again, some have found support for the theory that the latter breed owes its origin in part to this country. But, in truth, the probability is rather the other way. There have undoubtedly been casual introductions of Merinos into this country, and probably some, at any rate, found their way into remote districts from the wreck of the ships of the Armada, so that in certain cases there is possible admixture of Merino blood in the flocks of this country.

*Photo by*

COTSWOLD SHEARLING RAM.

*[G. H. Parsons.]*

## CHAPTER II.

## BRITISH SHEEP AND WOOL PRODUCTION.

BRITISH sheep may with confidence be assumed to be coeval with the British nation, although there is not very much direct evidence of their early existence in these islands. Cæsar found abundant cattle (*pecoris magnus numerus*, which may be inferred to include sheep), amongst the aborigines of Kent, whom he described as "the most advanced in civilization of all the ancient Britons." There is record of the existence of a woollen manufactory at Winchester shortly after the Roman conquest, so that at that period it is clear that the keeping of sheep must have been a well recognised industry.

Lord Cathcart, in his famous article on wool in the journal of the Royal Agricultural Society for 1875, observed, "the more we study the history of the subject the more we are taught that wool and the wool trade was the foundation of our English commercial prosperity."

Green, in his "Short History of the English People," refers to "the long peace and prosperity of the realm, the extension of its commerce, and the *increased export of wool*," as tending to form at the end of the thirteenth century that middle class which checked the power of the barons and formed the Commons of England. On the back, or rather

from the back, of the humble sheep was built, in a large degree, the wonderful structure of British Commerce, and thus indirectly the still more wonderful structure of the British Empire. In the reign of Good Queen Bess this fact was significantly recognised by making a Woolsack the official seat of the Lord Chancellor—as it continues to this day.

But these considerations, interesting as they are in themselves, might lead us too far a-field for the present purpose. It is not until towards the end of the eighteenth century that history becomes of immediate interest to the practical sheep-farmer of the present day. It is from that time that the various breeds of sheep as we know them may be said to take their rise.

The following passage from a report on the sheep exhibited at the great show at Windsor in 1899 may be quoted here:—

“It was towards the latter part of the last century that one or two thoughtful men grasped the simple, but then novel, truth that a sheep does not, or need not, live for wool alone. Robert Bakewell, of Dishley, was the first and most prominent of these reformers. He went, possibly, to extremes, and sacrificed, as is alleged, the fleece too recklessly in his new-born zeal for the improvement of the carcass, but he unquestionably did a great work and laid the foundation of British sheep as we know them now. After him arose another



giant of those days—John Ellman, of Glynde—who did for the Shortwools that Bakewell did for Longwools. These two men represent the two movements whence came the improvement of the national flocks. . . . At the time when the Royal Agricultural Society was started (1839) the two broad streams of amelioration which flowed from Dishley and Glynde respectively had overswept the country. There was scarcely a district which the improved Leicester had not invaded, scarcely a breed on which it had not left some impress. The improved Southdown, if less ubiquitous, had exerted an influence not less potent, and had helped to lay the foundation of breeds which long ere this have rivalled it in importance and fame. A spirit of alertness and enterprise was abroad. The then recent discovery of Liebig that the natural heat of the body is maintained by food, that cold is accordingly wasteful to the stock-keeper, and that consequently sheep will thrive and fatten quicker with warmth and shelter, had just been practically grasped by flock-masters. Lord Spencer, in the earliest pages of the *Journal*, urged the necessity of keeping 'accurate pedigrees' of cattle and sheep, while Mr. Pusey announced that the new Leicester, or a Leicester and Cotswold cross, effected a saving in the cost of production (by reason of early maturity) amounting to 20 per cent. In the *Farmers' Magazine*, a Hampshire sheep-breeder, Mr. Twynam, was

challenging, through Lord Spencer, the flock-masters of the country to a trial of 25 wether lambs to be wintered on arable land with the view of determining the greatest value in wool and mutton of the several breeds."

#### PRODUCTION AND PRICE OF WOOL.

Owing to the renewed importance which the recovery in prices in recent years has given to the supply of British wool, the Board of Agriculture have made an attempt to obtain more definite particulars than have hitherto been available of the production of wool by different breeds of sheep throughout the country.

The rise which has taken place in the price of wool since 1902 has probably surpassed in its rapidity and extent any change in agricultural values which has occurred during the whole period since what is usually termed the depression set in.

It will be observed that since the rise commenced in 1902 its progress, taking all classes of wool into account, appears to have been fairly consistent from year to year. During 1906 the advance received some check, and for some months there was little if any improvement.

On the whole, however, the upward movement continued, and the rise on the year appears to have amounted to  $1\frac{1}{2}$ d. per lb.; while since 1902 it amounts on the average to about  $6\frac{1}{2}$ d. per lb., or 100 per cent.

## NUMBER OF SEPARATE BREEDS.

The information collected in this report as to the variety of breeds of sheep kept in Great Britain affords some index to their relative importance in particular counties. It cannot, however, be regarded as exhaustive, and, although it may, perhaps, be regarded as fairly approximating to a general survey of the country, it is quite insufficient to furnish a statistical basis for a "census of breeds." The number of separate breeds for which estimates have been supplied from one or more counties in Great Britain is 29, and the complete list as follows:—

Blackface,	Leicester,
Border Leicester,	Lincoln,
Cheviot,	Lonk,
Clun,	Orkney,
Cotswold,	Oxford Down,
Dartmoor,	Radnor,
Derbyshire Gritstone,	Ryeland,
Devon Longwool,	Shetland,
Dorset Down,	Shropshire,
Dorset Horn,	South Devon,
Exmoor,	Southdown,
Hampshire,	Suffolk,
Herdwick,	Welsh Mountain,
Kent or Romney Marsh,	Wensleydale.
Kerry Hill,	

## DISTRIBUTION OF BREEDS.

It would be seen that the most widely distributed breeds are the Blackfaced and Cheviots, which are not only kept in the majority of Scottish counties, but also figure in the returns for several English counties. The same may be said in a somewhat less degree of the Border Leicester, so that the Scottish admixture in English flocks appears to have attained considerable proportions. Of the English breeds, five are prominent by reason of the number of counties from which estimates of their wool-bearing capabilities are supplied—viz., Hampshires, Shropshires, Oxford Downs, Southdowns, and Lincolns.

## YIELD OF WOOL.

The basis of any estimate of wool production is, of course, the number of sheep returned in each year on June 4th. It is evident that all the sheep then returned as one year and above may each be reckoned as contributing what may be termed a normal fleece in that year.

Thus the average number of sheep of one year and above returned to 1905 and 1906 in Great Britain being 9,998,400 breeding ewes, and 5,123,200 other sheep, and the average weight of fleece being estimated at  $6\frac{3}{4}$  lb. and  $6\frac{1}{2}$  lb. respectively, the total amount of wool furnished by them would be 87,838,000 lb.

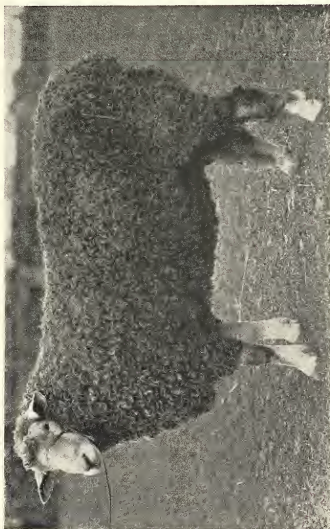
But there were two further sources of supply. When sheep are slaughtered the wool then on their

backs, which is more or less according to the period which has elapsed since they were shorn, is brought into contribution. The number of sheep slaughtered between one enumeration and another can be calculated from the returns with reasonable accuracy, and during the two years from June, 1904, to June, 1906, it is estimated at 11,000,000. If the average weight of a skin fleece is estimated at  $2\frac{3}{4}$  lb., the quantity thus available is 35,250,000 lb.

The other source of supply is lambs' wool, as to which the information available is somewhat scanty. From the references made in the growers' returns, it appears that in the South-west of England many lambs are shorn, and in most of the counties south of the Trent the practice seems to be more or less adopted. There is, however, very little information on which to found an estimate of its prevalence. Welsh lambs are generally shorn. The number of lambs' fleeces which passed through the hands of buyers furnishing returns was rather more than 5 per cent. of the total number.

On the whole, it would appear that an estimate of 2,000,000 lb. from living lambs and 1,000,000 for slaughtered lambs may be reasonably adopted.

The average production of wool for the United Kingdom for the year 1905-6 was 133,088,000 lb., thus we produce at home about 27 per cent. of the required quantity of wool used for home consumption.



*Photo by]*

SOUTH DEVON TWO-SHEAR RAM.

*[Sport and General.*

## CHAPTER III.

## THE MANAGEMENT OF SHEEP.

Early Maturity—Profit Making—Cost of Keep—Pedigree Sheep—  
Hints on Fattening.

THE management of sheep shows an infinite variety even within the comparatively narrow limits of the British Isles. Every breed has its peculiarity, every district its favourite system. Some breeds will stand close folding and thrive best if so treated, while others must be spread over the land.

Over a large part of the arable and mixed farming districts it may be said that the sheep are not only products of the land, but cultivators and manure distributors as well. They fit into their necessary place in the management so that to eliminate them would involve an entire change in the system of farming.

It is this which gives the sheep its distinction above other farm animals, and entitles it to be termed the backbone of husbandry. When the turnip was introduced into this country it was rightly said that it revolutionised agriculture, but it is difficult to imagine the turnip-crop without sheep.

If the whole land of the country were in grass, and the plough were relegated to museums of

antiquities, it would not of necessity involve the extinction of the sheep, but it is certain that the value of that useful animal would be greatly reduced to the farmer.

#### EARLY MATURITY.

But of course, the sheep, in addition to its "golden hoof," is primarily a mutton and wool producing animal. The fleece has lost some of its importance in face of the enormous importations of fine wools from abroad. It is only a limited proportion of British wool which now ranks among the best, the main bulk coming into competition with imported wools which are more suited to the present demand.

In the case of mutton, however, our native flocks still retain their superiority, and it is in this direction, therefore, that the sheep-owner should mainly look. In spite of temporary fluctuations and difficult seasons the production of first-class mutton will still show a profit. But to secure this the flock-master must study three main points, viz., quality of mutton, smallness of joints, and early maturity.

It is of little use nowadays keeping a class of sheep which does not produce good mutton—close, well-grained lean meat with a small proportion of fat. Nor is the big sheep favoured by the butchers, or likely to make the top price in the market.

The necessity of early maturity is now well under-



stood and, indeed, obvious. The days when a four-year-old wether was deemed the acme of good mutton, and when there was a regular demand for it, are gone, no doubt, for ever. The generation which knew and appreciated it is dying out, but if the demand were not almost extinct, the supply must in these days fail, for the flock-master, like every other business man, must turn over his money quickly, and cannot afford to feed a sheep for three or four years, now that the annual interest obtained by the fleece is reduced to such limited dimensions.

A fattening sheep, to be profitable, must be kept going from birth, and will be sold at about a year old, or not much more.

#### PROFIT-MAKING.

The question of the profits of breeding and feeding sheep is one which it is almost impossible to deal with in general terms. The variations of conditions are so wide that calculations which would exactly fit one set of circumstances would be absurd when applied to another.

In addition to this so much depends upon the market price at the time when the sheep are sold, and this again varies from one season to another within considerable limits. But it may be useful to take the case of a particular flock, and to see what the returns would be under normal conditions on an arable sheep farm in the South of England.

## RETURNS FROM THE FLOCK.

Let us take the case of a flock of 500 ewes on a holding of say 500 acres. We may reckon, taking one year with another, that 500 lambs will be reared, after allowing for barren ewes, dead lambs and other casualties. Half of the lambs we may reckon as ewe lambs, and of these about 180 will be required to go into the flock to take the place of those which are culled each year.

Allowing for casualties, the actual number of cull or draft ewes will probably not exceed 170. There will also be 70 of the ewe lambs to be sold off, and, of course, the whole of the 250 wether lambs. This makes altogether 490 to be fattened and sold off, and it will, perhaps, be somewhere near the mark if we reckon that they will make in round figures £1,000. There will also be the wool, which may be put at £150, making the gross proceeds of the flock for the year £1,150, or rather more than £2 per head of the standing flock, taking a somewhat favourable estimate.

The problem to solve, supposing this were anything like an approximate statement of gross revenue, is what are the outgoings, and what consequently the profits? As every farmer knows, nothing is more difficult than to arrive at the actual cost of a particular undertaking, and separate it from the other operations of the farm.

What, for instance, is the cost of a crop of roots

fed off by sheep, and if the total cost be arrived at, how much must be accredited as manuring and preparation for the succeeding crop? Supposing figures to be put down, they can only be estimates at best. A similar estimate must be made for the cake and corn consumed.

#### COST OF KEEP.

Many writers on agricultural subjects have puzzled over this question without removing the difficulties in the way of arriving at the actual cost of keeping a flock of sheep for a year. Perhaps the simplest method is that suggested by Professor Wrightson, who takes the cost of maintaining a ewe from weaning to weaning. Keep, as he points out, is a marketable commodity, and can be had at 3d., 4d., 5d. and 6d. per week, or even higher in exceptional cases. Keep can generally be had, in the south country, at 4d. per head per week, even when no cake is fed, and if  $\frac{1}{2}$  lb. of cake is consumed by the sheep on the land, probably 4d. would secure ordinary keep of hay and turnips at any time.

Suppose weaning to take place on June 1st—this would be in a Hampshire flock—there is usually a time of abundant keep up to October 1st, during which the ewes ought not to cost more than 3d. per head per week. From October 1st to February 1st is a time of greater scarcity, and the cost must be raised to 4d. per head, while

assuming that the ewe produces her lamb on February 1st, she will get more costly food, and up to June 1st the outlay will reach 5d. per head. This calculation brings the cost of food to about 17s. 3d. per head for the year.

There are, of course, other expenses, including labour, interest on capital, losses, and incidental outgoings, which, if put at 2d. per head per week, bring up the cost for the year to about 26s. The cost of the lambs from birth to weaning may be put at about 4s. per head. This will bring the total outlay on the ewes and lambs up to £850.

The cost of feeding the lambs and the culled ewes must then be added, and this, of course, depends on the length of time before they go off, but it will easily be seen that there is not very much margin left, and that the manurial value must probably be taken into account if a balance on the flock is to be shown.

In practice, however, with an average season, and ordinary luck, it may be fairly said that a flock shows a tangible profit, but on the other hand, there are years when there is an undoubted loss. We do not go into the question of buying in sheep for fattening, because this is a special branch which does not belong to sheep-breeding proper, and because the results of this depend so entirely on the price of the store sheep when bought in, and the price of mutton

when sold out. It must always partake to some extent of the nature of a speculative transaction.

### HINTS ON FATTENING.

With regard generally to fattening sheep it may be noted that they are best kept rather closely in small lots, fresh ground being given each day if practicable, and great regularity observed in feeding. During the short days of winter the routine of operations should consist in supplying corn and cut straw the first thing in the morning, and while this is being consumed the troughs should be filled with roots, which should be thoroughly cleaned, as well as the troughs. There is much difference of opinion as to the desirability of slicing or pulping the roots, but the majority of the best farmers now adopt one or other of these practices.

The sheep have their fill, and lie down at about ten or eleven to ruminate. The fresh fold may now be pitched and the sheep left undisturbed until about two when feeding commences. The root troughs should be filled, and more corn and cut straw given either then or preferably the last thing at night. As the spring advances the sheep must be attended to early in the morning, and late at night, and roots supplied three times a day. A teg will eat from 18 to 20 lb. of roots, and  $\frac{3}{4}$  to 1 lb. of cut straw with corn per day. Water should be given, and rock-salt should never be absent.

## CHAPTER IV.

## RAM-BREEDING.

THERE is a still more specialised branch of sheep-farming viz., the breeding of rams. This was at one time in comparatively few hands, but of late years the number of those who go in for it has very greatly increased. As the number of sheep in the country has not been augmented, the only real excuse for this increase is the foreign demand.

There is a well-established trade in rams of many of the principal breeds, such as Lincolns, Shropshires, Oxford Downs, Hampshire Downs, South-downs, and Dorset Horns, and on the whole it shows continued vitality.

For many years the Continent took a certain number of rams every year, and there is still a small but steady demand, from Germany in particular.

The United States and Canada have taken large numbers of English rams, but there was, for a time, a marked diminution in this trade, which, however, has revived of late years.

But the entry of the Argentine flock-masters into the market is the predominant factor. They buy with great determination, and although they mainly

fixed their attention on one breed—the Lincolns—there is no doubt that they are inclined to become buyers of other breeds.

Some of the prices given for Lincolns have been astounding, and culminated in the sale of one ram of that breed for 1,420 guineas, a figure which was unprecedented for an English sheep, although it has been equalled and surpassed by Merino rams in Australia.

There are those who predict that the foreign demand for pedigree rams is only temporary, and that when the sheep in those countries to which some of our best specimens are sent have been once improved and levelled up they will maintain their standard without further help from this country.

In the course of time this may prove correct, but the end of the export trade is not likely to be seen by this generation at any rate. It is not, so far, found that the character of the British breeds can be maintained in other climates without fresh supplies from the fountain head.

In the United States there is a strong feeling in favour of buying rams only within their own borders. Doubtless, there are now many pedigree flocks in that country which have reached a high degree of excellence, but the most enterprising of the breeders admit that they cannot keep up the standard, without reverting occasionally to the

original British stock. While this is so, and while vast countries like Argentina remain to be developed there is little cause for anxiety as to the present permanence of the foreign trade in pedigree sheep.

### PEDIGREE SHEEP.

It is largely due to the foreign trade that all the leading breeds have in recent years established Registers or Flock Books, which enable sheep to be sold with a certificate of their pedigree. The rage for "Records" has extended to all kinds of stock, but it is of such recent growth in the case of sheep that it is as yet too soon to estimate its final effect upon the different breeds. It may possibly be found that there are disadvantages as well as advantages in shutting up each separate breed in a ring fence, so to speak, and preventing the possibility of a cross creeping in. It was certainly not so that the breeds were formed, and the old breeders secured their greatest success.

In fact, no man who professes to keep a pure-bred flock can now afford to remain outside the Flock Book Association of his breed. The Breed Associations are undoubtedly nowadays the dominant factors in the live stock industry. For many years the agricultural shows exerted great influence, but it may be doubted whether they now have much appreciable effect, at any rate, so far as sheep are



concerned. They provide breeders with an excellent means of advertising their stock, but beyond that it is questionable whether they do very much for the older breeds. In the case of new breeds, no doubt the showyard is of much service in bringing them into notice, and also, perhaps, in helping to fix the type.

## CHAPTER V.

## BRITISH BREEDS :—LONGWOOL.

Leicesters—Lincolns—Cotswolds—Romney Marsh—Devon Longwool—Border Leicesters—Wensleydale—Roscommon.

THE large number of different breeds of sheep in the British Isles has already been the subject of remark. In this respect this country, considering its size, is remarkable and probably unique. No doubt to the casual observer the points which distinguish one breed from another, although in some cases obvious enough, are not always apparent, but to the sheep-breeder they are perfectly clear. Each breed has its own peculiar characteristics, derived in the first instance generally from the conditions of the district in which it originated, and developed by careful attention, skilful breeding, and, above all, scientific selection. Darwin long since made clear the effects which, in the wild state, natural selection has in modifying animals so as to adapt them to their environment, and to secure the survival of the fittest.

In animals domesticated for the use of man the breeder steps in and replaces natural selection by artificial selection, his object being the gradual establishment of a type best suited, not for holding its own in the struggle for existence, but for fur-

nishing the maximum amount of food and clothing for man, at the least expenditure of time and money. He has of course to work hand in hand with Nature, and not against her, and consequently he has to adapt his processes to the laws which she has laid down. In so doing he is able to develop from diverse materials an animal which in essential qualities approximates to an ideal, but which at the same time retains many of the prominent features of the original. Thus the different breeds, while all possessing points of essential resemblance, have also points of strongly marked difference.

In referring to the different breeds it is convenient to retain the classification which has long been adopted, and to divide them under the three categories of (a) Longwools, (b) Shortwools, and (c) Mountain or Forest breeds.

#### THE LEICESTER.

The Longwool breeds originally inhabited the rich plains, the alluvial meadows, and the salt marshes of the country, while the Shortwools were indigenous to the uplands and downs. This division of territory has long ago overlapped, but to some extent it still holds good. The most famous breed of Longwools, though by no means the oldest, is that of the Leicesters. There was an old Leicester breed which was heavy, coarse-grained, long, thin, flat sided, with large bones and thick legs. It was

on this material that Robert Bakewell exercised what may almost be termed his creative art. The result of his work was, as a well-known writer observes, "not only the creation of a breed by art, but the establishment of principles which are well-nigh universal in the production of animals for human food."

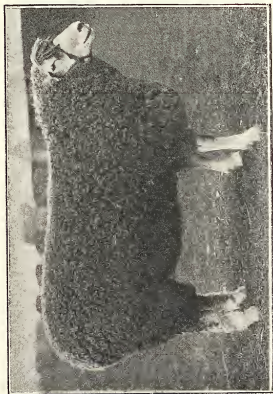
No doubt Bakewell, of whose methods, owing to his natural secretiveness, little is really known, availed himself of other material, but the old Leicester was the foundation stock on which he built up the improved or "Dishley" Leicester. His main object was to reduce the bone and offal, to obtain symmetry in the carcase, and improve the mutton, and to increase the sheep's aptitude for feeding and putting on flesh quickly. He practically ignored the fleece, which until then had always been regarded as the foremost object of the sheep-breeder's endeavour, and set himself to breed a sheep which would give a large quantity of fat mutton.

It is sometimes urged against him now that he got too much fat, but he knew his market, for in his time the largest and fattest sheep commanded the best price. It was found for many years that to take a small and not overfed joint of mutton into one of the large towns of the north was to run the risk of not selling it, for the usual practice was to

put a large joint of fat mutton over a dish of potatoes on the working-man's table. The meat went to the heads of the family, while the potatoes, saturated with fat and gravy, went to the younger members. It is reported that Bakewell once said in answer to an objection that his mutton was too fat, "I do not breed mutton for gentlemen, but for the public; and even my mutton may be kept leaner to suit every palate by stocking harder in proportion, and by killing the sheep in time." In these times, when small lean mutton is most in demand, sheep-breeders cannot excuse themselves for getting sheep too fat by quoting Bakewell, who studied the market of his day: they should study that of the present day.

The Leicesters, however, are still characterised by a deficiency of lean meat, although they are capable of very early development, and of getting to heavy weights. The wethers when fattened in their second year weigh 25 to 35 lb. per quarter, the fleece 7 to 8 lb.

The Leicester has a white face with black lips and nostrils, ears thin and long, neck short and set on level with back, breast very deep and wide, and shoulders wide and sloping, great "thickness through the heart," and well filled up behind the shoulders, ribs well sprung, loins wide, hips level, barrel round, deep and symmetrical, bone fine, legs well set on, with good feet and hocks.



LINCOLN SHEARLING RAM.  
Sold for 900 Guineas.

## THE LINCOLN.

The old Lincoln breed was one of the sources drawn upon by Bakewell, and subsequently the Dishley Leicesters were in turn used to improve the huge gaunt breed of the fens. An extraordinary weight of the fleece was always characteristic of the breed, and in the improving process this was retained, while aptitude to fatten and greater symmetry of form were secured. The Lincoln still remains one of the biggest breeds, while its wool ranks highest in quantity and quality combined. As the late John Algernon Clarke—a Lincolnshire man—observed, “the Lincoln now possesses a size, expansion of frame and nobility of appearance equal to those of the Cotswold, with the compactness of form, quality of flesh, fine countenance, and light offal of the Leicester, while surpassing both for the weight and value of the wool. A frequent weight of wool from a ram is 25 lb., and as much as 32 lb. of clean-washed wool has been recorded. A good breeding flock will average from 12 to 14 lb. each fleece. As a rule the wethers average 25 lb. per quarter, and the wool 12 lb. per fleece, though these weights are often exceeded. The sheep are hardy, and the ewes very prolific.”

In recent years the Lincolns have renewed their youth, after passing through a period of comparative obscurity, in the most remarkable way.

A wonderful demand for them arose among foreign breeders, notably in the Argentine, and startling prices were realised by the leading breeders. Three figures have been quite common for the best rams and frequently over 1,000 guineas has been given.

#### THE COTSWOLD.

The Cotswold is one of the handsomest of English breeds of sheep. It forms an exception to the rule that Longwools inhabit the lowlands, for its habitat is the bleak, thin-soiled Cotswold Hills. It is said by some that the Cotswold sheep of the present day are not the original breed of the hills, but there does not appear to be much reliable evidence for or against this theory. One characteristic of the Cotswold is its fine carriage. It is big, upstanding, and carries its head high.

The face is white with sometimes a few light grey patches or specks. There is in fact a flock of grey-faced Cotswolds which is claimed to have been kept pure, so that it is possible that the breed had originally a light grey face, although now it is invariably a pure white. The head always carries a long forelock which is distinctive of the breed. The carcass has much the same characteristics as that of the Border Leicester. The fleece is long and heavy, running often to 9 or 10 lb. The breed is hardy and will do well in exposed situations. The sheep can be brought to market at twelve months old, at a weight of 90 to 112 lb,



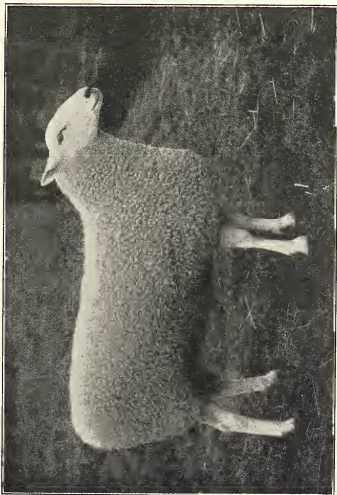
and it is not unusual for the best flocks to turn them out up to 120 to 130 lb. at that age.

#### THE ROMNEY MARSH.

The bleak flats of the south-eastern corner of the kingdom produce a class of sheep which is admirably adapted to its circumstances. The Kent or Romney Marsh breed are big-framed and heavy-woolled, though in neither respect quite equal to the Lincolns. They were no doubt—like all the Longwools—indebted to the Leicester for improvement, but this is long ago forgotten, and they now form a useful breed which is becoming known and appreciated beyond the district where it originated. They are white-faced and hornless, and the wool is of long staple and great weight. The fleece averages about 9 lb., and is very lustrous and fine. The sheep have to live through their second winter on the marshes without extra food, and continue to put on flesh, so that after being shorn the two-year-olds are ready to draw from to supply the local markets.

#### DEVON LONGWOOLS.

The Devon Longwool is a direct off-shoot of the improved Leicester. The native stock of the district was a large frame, heavy woolled, white-faced and hornless breed, and upon this the Leicester cross was repeatedly used, until the breed was developed into that seen to-day. It differs from the Leicester



CHAMPION BORDER LEICESTER RAM.

in having a larger and longer face, with greater width at the forehead and nose, the ears being also longer. The frame is more bulky and of greater length, although not quite so round or compact, but the girth is equal to that of the Leicester. It stands rather higher and surpasses the Leicester in constitution and hardiness. The wethers are never kept until they are two years old but come out in March, April and May weighing from 22 to 24 lb., and in some cases 25 lb. per quarter. The fleece weighs from 9 to 11 lb.

#### THE BORDER LEICESTER.

The Border Leicester has been aptly termed the mainstay of Border counties' farming. It now far excels in numbers and importance the original Leicesters from which it is descended. In form, size and shape the two breeds are still very much alike, the Border Leicester being rather longer and larger in the body. The differences are chiefly noticeable in the face, which in the Border Leicester is a clear white, and in the Leicester proper a bluish white. The head of the latter is clean and free from wool, while the former usually has a tuft of wool on the forehead.

The points of a typical Border Leicester ram have thus been set forth by the Hon. H. J. Scott, of Mertoun: Head white, hard and clean cut; eye clear and prominent; nose black; ears well set and free

from blue, but black spots do no harm; neck well set into shoulders, with bold, gay carriage; strong in neck vein, not ewe-necked; shoulders and chest deep and wide; ribs wide and round like a barrel, big through heart; deep in flanks; quarters long and square; light in offal; bones fine and hard like a deer; wool "pirly" fine lustre, well clad all over in belly and testicles; none on legs or head. General frame should be large and roomy, lines straight above and below; immensely wide, standing up well, yet not leggy, with a fine bold style and aristocratic expression. At 12 to 14 months old fat tegs weigh 23 to 25 lb. per quarter. The average weight of fleece is about 9 lb. The breed is largely kept pure, and it is perhaps even more widely crossed on the Cheviot.

#### THE WENSLEYDALE.

The Wensleydale is the direct descendant of the old Teeswater breed. Sixty years ago Mr. R. Outhwaite purchased a big Leicester ram for crossing on his Teeswater ewes, and among his progeny was the sire of the ram "Blue Cap," which is described as the "patriarch of the Wensleydales." Although the breed is restricted to a comparatively small area and is less numerous than many others, there is a curious division among the breeders, who array themselves in two rival camps, each side maintaining that they possess the true apostolic succession of the breed.

The Wensleydale sheep, as described by Mr. T. J. Other, is big, squarely-built and upstanding, with a good wide back, strong neck, good leg of mutton, a fleece of fine silky wool, and having great aptitude for laying on flesh rapidly. The skin of the face and ears is of a dark blue colour, this tint frequently extending all over the body. The mutton is of high quality, containing a large proportion of lean meat of fine texture. The sheep possess great size, hardiness and activity. They are extensively used for crossing with Blackfaced and other mountain breeds. The first cross between a Wensleydale ram and a Blackfaced ewe results in a sheep yielding first-class mutton and attaining from 18 to 22 lb. per quarter at 18 to 20 months. The produce of this cross put again to a Wensleydale ram produces a sheep which will attain 20 lbs. per quarter at 12 months, and has high quality mutton. Wensleydale yearlings will clip from 10 to 16 lb. of wool apiece.

#### THE ROSCOMMON.

The Roscommon, which may be counted as the chief breed of sheep in Ireland, is a large and useful sort which was also much indebted to the Leicester. They are generally reared entirely on grass, with the aid of some hay in winter. The mutton is of good quality, and the fleece averages about 8 lb. of soft, deep-grown and rich wool.



SOUTHDOWN TWO-SHEAR RAM.

## CHAPTER VI.

## SHORTWOOL SHEEP.

Southdowns—Shropshires—Oxford Downs—Hampshire Downs—  
Suffolks—Dorset Horns—Ryeland.

THE influence which the Leicester under Bakewell exercised in forming and improving the Longwool breeds, the Southdown in scarcely a less degree (in the hands of John Ellman, of Glynde) also exercised in developing the Shortwool breeds. Probably the Southdown is of purer descent than any other breed in the kingdom, as it has been very little indebted to outside crossing. It is stated that a cross with the Dishley Leicester was tried but proved a failure, and that the Merino was also tried with still less success. Consequently the breed may claim to have been improved by pure selection, unaided by crossing.

## THE SOUTHDOWN.

This breed is undoubtedly indigenous to the range of Sussex hills from whence it takes its name, although little is known of its ancient history. Mr. Ellman began his experiments as a breeder about 1780—a little later than Bakewell—and for over fifty years devoted his energies to the work of improving the Southdown sheep. In some respects his aim

differed from Bakewell's. Bakewell, as we have seen, endeavoured to obtain the maximum of fat with the minimum of bone, and neglected the fleece almost entirely. Ellman, on the other hand, would not force his young stock, and was mainly anxious to secure strength of constitution, and although at first he had to resort to in-breeding, from the difficulty in obtaining animals good enough for his purpose from other flocks, yet as soon as he was able he availed himself of fresh strains of blood. Arthur Young, writing in 1794, described Ellman's flock as the finest in the country.

The Southdowns have since spread widely over the country, and have been much used for crossing. In Norfolk and Cambridge they have formed a colony, so to speak, and a larger type of sheep has been there developed. Formerly 12 or 14 lb. per quarter was considered a fair weight for a two-year-old wether, and the finished sheep was often four or five years old, when it weighed perhaps 18 or 20 lb. per quarter. Now Southdowns are fit for the butcher at 13 to 15 months old, and up to the weight formerly attained by old sheep; while the two-shear wethers make 20 to 22 lb. and up to 30 lb. per quarter. The fleece averages about  $4\frac{1}{2}$  lb., the wool being very fine, close and curled.

The following are the points of the Southdown as given in the Flock-Book of the breed—"In a



good Southdown we look for a head wide and-level beneath the ears, with no sign of slug or dark poll, eyes large, bright and prominent; ears of medium size, covered with short wool; face dull, not too long from eyes to nose, and of one even mouse colour, not approaching black nor speckled with white; underjaw light; neck wide at base, strong and good; shoulders well put in, the top level with the back; chest wide and deep, thick through the heart; fore-flanks fully developed; ribs wide-sprung and well-ribbed up; back level, with wide and flat loin, the whole covered with firm flesh; flanks deep and full, rump wide, long and well turned; tail large and set on almost level with chine; thighs full and well let down, with deep, wide twist, ensuring a good leg of mutton; legs a mouse colour, and 'outside the body,' the whole of which should be covered with a fine, close and even fleece down to hocks and knees, and right up to the cheeks, with full fore-top; but there should be no wool under the eyes or across the bridge of the nose. The skin should be of a delicate and bright pink, the carriage gentlemanly, and the walk that of a thorough-bred."

#### SHROPSHIRE.

There is no breed which "looms larger" in the public eye than the Shropshires, which, thanks mainly to the wise enterprise of their breeders, have

*Photo by]*

SHROPSHIRE RAM LAMBS.

*[J. T. Newman.*

spread widely over the kingdom in a comparatively short time, and have secured a big slice of the export trade. Yet its history is practically comprised in the last half-century. It is generally assumed to have been of mixed origin, the chief ingredient being the old Morfe Common breed, but other local varieties, such as the Clun Forest, the Longwynd, and the Cannock Chase, contributed their share. There was probably also some infusion of Southdown, Leicester, and Cotswold blood, while it is also said that there was a Merino cross. At any rate some excellent materials went to the making of the breed which has now for many years been permanently established and kept strictly pure.

The Shropshire breeders were the first in this country to start a Flock-Book for the registration of pedigree flocks. The prominent feature of a Shropshire is the closely-covered head, the wool coming over the space between and in front of the ears and even down the face. The head is well-developed with muscular neck well set on, and good shoulders; the barrel is deep and symmetrical, placed as squarely as possible on short legs. The skin should be cherry colour, the face and legs "a soft black, not sooty nor a rusty brown," and free from white spots. Shropshire ewes are prolific and good mothers. Wethers with good farming will come to market at 11 to 14 months old,

weighing 20 to 25 lb. per quarter, and in some cases greater weights. The average weight of fleece for a fair flock is 7 lb., but many average  $7\frac{1}{2}$  lb. and greater weights are common for individual sheep. The mutton is of good quality, carrying a large proportion of lean meat.

#### OXFORD DOWNS.

About sixty years ago the breed now known as Oxford Downs was first established by crossing Longwools, such as Leicesters and Cotswolds, upon Shortwools, such as Southdowns and Hampshires. The aim of the few skilful and enterprising men who undertook this was to combine the weight and wool of the Longwool with the quality of the Down, and the result of their efforts was markedly successful. It took of course some patience and perseverance to fix the type, but once this was done the breed made wonderful progress and has now become very popular. It possesses, along with uniformity of character, great hardiness of constitution and adaptability to situation, a large frame, aptitude to fatten, mutton of good quality and a heavy fleece of thickly-set wool.

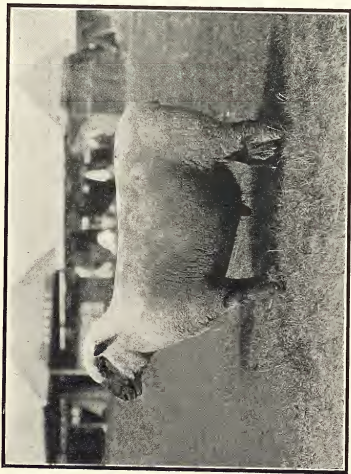
An Oxford Down ram is thus described in the Flock-Book of the breed:—"He has a bold masculine head, well set on a strong neck; the poll is well covered with wool and adorned by a top-

knot; the ears are self-coloured and of good length; the face is a uniform dark brown colour; the legs are short, dark-coloured (not spotted) and placed well outside him; the barrel is deep, thick and long with straight underline; the chest wide; the back level; ribs well sprung; tail broad and well set on; the mutton is firm, lean, and of excellent quality; the fleece is heavy and thick on the skin."

There is a resemblance between the Oxford Down and the Shropshire, or rather there was, for there is less of late years since the fashion of breeding has led the latter to become finer and smaller than they used to be. Professor Wrightson notes this resemblance and states the characteristic differences of the two breeds very clearly. The Oxford Down head is longer and the profile is bolder and slightly more Roman and fine; the Oxford Down ear is long and thin, whereas the Shropshire ear is shorter and rounder. The former carries himself a little more gaily and uprightly, and his wool is rather longer and looser. The wool on the head of the Oxford Down is longer and more like a forelock than that of the Shropshire, which is closer, fitting like a cap or helmet.

#### HAMPSHIRE DOWNS.

The Hampshire Down is another comparatively new breed, although in this case there was a foundation stock in the old Hampshire and Wiltshire



HAMPSHIRE DOWN TWO-SHEAR RAM.

sheep which, however, quite disappeared early in the century. The repeated use of Southdown rams on the sheep of the district resulted in a "modified Southdown," which retained the size and wool of the old breed. The head—which is in all breeds the most characteristic feature—is unmistakable. The face is thick and bold, and the ears fall slightly outward, thus accentuating the width and tending to give the head that "sourness" which is typical of the best flocks. The colour of the face and legs is very dark; indeed it can hardly be too dark so long as it is accompanied with white wool. The head is well covered with wool both between the ears and on the cheek. The neck is rather long but thick and muscular. The shoulder tops are wide, and the girth behind the shoulders and of the entire fore-end must be well marked. The fleece is composed of exceedingly fine fibres, and is thick on the skin, which is pink in colour.

The breed is famous for its extreme earliness of maturity, the fact that ram lambs are habitually used at eight to nine months old sufficiently illustrating this. The late Mr. John Coleman pointed out that while the Cotswold appears to least advantage as a lamb, with the Hampshire it is just the reverse, as he appears to the greatest perfection in July and August when about seven to eight months old. In March or April they will readily attain a weight of from 12 to 14 lb. per quarter, and by October they

weigh as much as 80 to 100 lbs. The breed is very hardy, will stand close stocking, and thrives well between hurdles.

#### SUFFOLKS.

The Suffolk breed is another off-shoot of the Down variety of sheep, which extended over the whole range of chalk hills running through the eastern and southern counties. Its progenitors were the old Norfolk horned sheep, which were crossed extensively with Southdown rams. As the result of the cross the form and fattening propensities were improved; the black face and legs of the Norfolk were retained, but the horns were got rid of. The exceptional darkness—a real ebony black—of the face is a characteristic feature. No breed has within living memory made such great improvement, a result largely due to the influence of the Flock-Book Society, established some years ago.

The points of the breed are thus set out in the Flock-Book:—Head hornless; face black and long and muzzle reasonably fine, especially in ewes (a small quantity of clear white wool on the forehead not objected to); ears a medium length, black and of fine texture; eyes bright and full; neck moderately long and well set; shoulder broad and oblique; chest deep and wide; back and loin long, level, and well covered; tail broad and well set up; ribs long and well sprung, with a full flank; legs and feet straight and black, with fine and flat bone;



woolled to knees and hocks, clean below; forelegs set well apart; hind legs well filled with mutton; belly well covered with wool; fleece moderately short, close fine fibre without tendency to mat or felt together, and not shading off into dark wool or hair; the skin is fine, soft and pink.

At the Smithfield Show Suffolk wethers at 12 to 24 months have averaged 271 lb. live weight; ewes over three years 275 lb., and lambs 187 lb. The fleece averages about 6 lb.

#### THE DORSET HORN.

The Dorset Horn breed differs from the other Down breeds already noted, which have dark faces and legs, in being white-faced, and also retaining horns. It is an instance of an old breed improved mainly by selection, and very little indebted to out-crossing. It is probably, says Professor Wrightson, the direct descendant of the old Wiltshire breed which was driven westward by the Southdown. The chief characteristic of the breed is the fact that the ewes take the ram at any season, so that they produce lambs at an earlier period than any other breed, and will if desired breed twice a year, although this is not generally practised as it entails too great a strain upon the ewes.

The breed is now kept in many parts of the country by those who wish to make "Christmas lamb" a speciality. The lambs at 10 to 12 weeks

old average 10 to 14 lb. per quarter, and the wethers at 13 to 14 months weigh 70 to 80 lb. of carcase. The ewes clip 5 to 6 lb. of wool, rams 10 to 12 lb., and lambs, which are usually shorn, about half as much as the ewes.

In the Flock-Book of the breed Dorset Horns are thus described—"They are full in the shoulders without coarseness, and the hind limb is well let down towards the shank, forming a good leg of mutton with small bone. The general features are pleasing, the head standing well up, the horns thin, with a symmetrical curl, the eye quick and lively, the face rather long and thin, and the lips and nose pink or flesh-coloured. They are excellent nurses, good folding sheep, and the mutton well flavoured and has a good proportion of lean."

#### THE RYELAND.

The Ryeland breed at one time occupied an important position by reason of the exceptional quality of its wool, but it is now in very few hands, although quite recently it has again attracted attention. It is a white-faced, hornless, short and close-woolled breed, and might be roughly described as a white-faced Shropshire, in the formation of which breed it is said by some to have had a part. Both in mutton and wool, however, it stands high, and is very likely to come prominently to the front in the future.

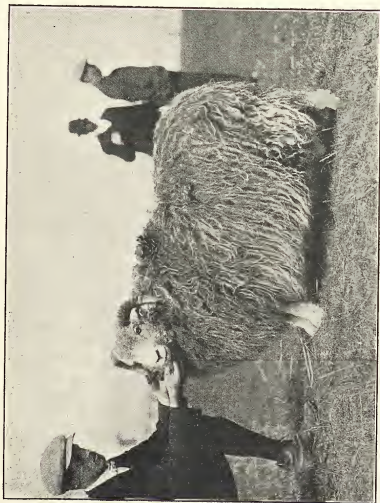
## CHAPTER VI. MOUNTAIN BREEDS.

Blackfaced—Cheviots—Herdwicks—The Lonk—Limestone and Penistone—Welsh Mountain—Exmoor—Dartmoor.

THE two divisions of sheep which we have previously considered may each be described as homogeneous. There is a kind of family likeness between all the varieties of Longwools, and although in the case of the Shortwools there is perhaps greater diversity, yet there is still a general similarity amongst them all. But when we come to the third division—the Mountain and Forest breeds—we find two or three groups which have very little in common except their hardiness and capacity for thriving in exposed and elevated situations.

### BLACKFACED.

The most famous mountain breed is that of the “Blackfaces,” or “Blackfaced mountain” breed. It is uncertain whether they originated in England or Scotland, but it is certain that they have been from time immemorial the native denizens of the range of mountains running from the Peak district of Derbysbire northward through Yorkshire, Cumberland, and Westmorland to the Scottish Highlands. There is a tradition that the breed was established upon the farm of King James IV. in



HERDWICK SHEARLING KAM.

the forest of Ettrick in 1503, while by some it is said that they were brought over in the Spanish Armada. Youatt, indeed, states that "it is a common belief in Scotland that the Blackfaced sheep are of foreign origin." Low says that it may be supposed to have found its way into Scotland by its northern mountains, and that it has been settled for an unknown period in the highlands of Roxburgh, Dumfries, Selkirk, Peebles, Lanark and adjoining counties. Its introduction into Argyleshire and the central and northern Highlands took place about the middle of the last century, when sheep began to supersede the herds of cattle which then abounded in the Highlands.

The breed found an enterprising improver in the person of David Dun, of Kirkton, who has been spoken of as the Scotch Bakewell. The characteristic feature of the breed is that from which it takes its name. The face is, however, not wholly black, but black and white, the former colour predominating. The two colours are not blurred or intermingled but are each in definite patches, giving a striking appearance to the head, which is adorned with horns low set at the crown, and turned backward rather than forward, with a clear space between them. There is usually a tuft of fine wool on the forehead, termed a snow lock.

The sheep are very strong, hardy, and of excellent

constitution, enabling them to endure the severe climate to which they are exposed. They have also the important faculty of being able to find a subsistence upon heather. Although a mountain breed *par excellence* they are not so wild and restless as some others, and can be kept in enclosures without much difficulty. The ewes, when fat, will weigh from 15 to 18 lb. per quarter, and the wethers from 16 to 20 lb. per quarter. Sheep nineteen months old have been got up for Christmas shows to weigh 215 lb. live weight. The wool is long and of coarse quality. The average clip of a flock is  $4\frac{1}{2}$  to 5 lb. per head.

#### CHEVIOTS.

The great rival breed to the Blackfaces is the Cheviots, which differ from them completely in appearance. The Cheviots, of course, take their name from the well-known range of hills on the Scottish border, where they have flourished from time immemorial. About the middle of the last century their improvement was taken in hand by one or two leading breeders, who bought a number of Lincoln rams and used them on their flocks. During the early part of the present century the Cheviots spread widely over the south of Scotland, displacing the Blackfaces over a wide area. There has since been some reaction, as the greater aptitude of the Blackfaces for thriving on the higher levels

has been appreciated, but the Cheviots are still kept very extensively in the Lowlands, and have also migrated with success to other parts of Great Britain.

The following description of a ram of the breed is given in the Flock-Book, which has lately been established:—"A Cheviot tup when arrived at maturity weighs when fat at least 200 lb. live weight. He should have a lively carriage, bright eyes, and plenty of action. His head should be of medium length, broad between the eyes, well covered with short, fine white hair; his ears, nicely rounded and not too long, should rise erect from the head—low-set or dropping ones are a decided fault, but at the same time they should not be what are called hare-legged, that is, too near to each other, as that indicates a narrow face, which generally denotes a narrow body. His nose and nostrils must be black, full and wide open; his neck strong and not too long; his breast broad and open, with the legs set well apart. His ribs must be well sprung and carried well back towards the hook bones, as a long, weak back is about the worse fault a Cheviot can have. His back must be broad and well covered with mutton; his hind-quarters full, straight and square; the tail well hung and nicely fringed with wool. His legs must stand squarely from the body (bent hocks either out or in, the latter

especially, are looked upon as a weakness); the bone must be broad and flat, and all must be covered with short, hard, white hair. He ought to grow a fleece weighing 10 to 12 lb. of fairly fine wool, densely grown, and of equal quality. Coarseness on the top of the hocks is a decided blemish; the wool should meet the hair at the ears and cheeks in a decided ruffle; bareness there or at the throat is inadmissible, and it should grow nicely down to the hocks and knees. The belly and breast should be well covered."

The average clip of wool for a hill flock is  $4\frac{1}{2}$  lb. each. If wethers are kept the average will be increased. Fat ewes weigh from 14 to 18 lb. per quarter, and wethers at three years old, 18 to 20 lb. per quarter.

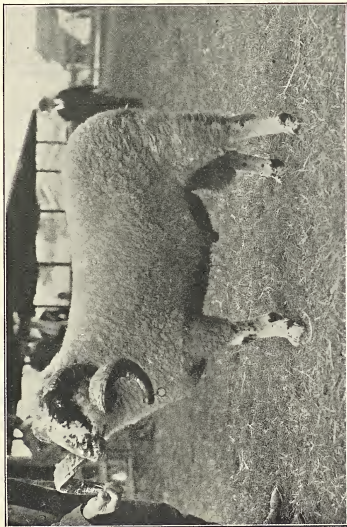
#### HERDWICKS.

Herdwicks are a local breed kept almost exclusively on the mountains of Cumberland and Westmorland. There is a picturesque story that forty small sheep managed to save themselves from the wreck of a Spanish galleon driven ashore from the Armada on the coast of Cumberland. They were claimed as flotsam and jetsam by the lord of the manor, and from them the Herdwick breed has descended, and has for 300 years held its own in the country, the invasion of which it thus accomplished



more successfully than its masters. Of course, the truth of the story is disputed, like that of every other interesting tradition, but, anyhow, there are the sheep, and their purity of blood is at any rate unquestionable. Mr. James Bowstead observes:—"There are many yeomen in the dales of Cumberland and Westmorland whose flocks have been handed down from father to son for generations without a blot or stain on their pedigrees, and he would be a degenerate son who would dare to try a cross."

The Herdwick has a heavy fleece of fairly strong wool, growing well down to the knee and hocks, a broad, bushy tail, nose arched or Roman, nostrils and mouth wide, eye prominent and lively, ears white, fine, erect, and always moving. As regards colour or markings of the face and legs, there should be no spots or speckles, or any brown, as these are considered sure signs of a cross. When the lambs are born their legs and heads should be perfectly black, with the exception of a little white on the tips of the ears, and perhaps a few white hairs round the feet; these white hairs gradually increase, so that at six months old one third or half the ear will be "hoar frosted," and there will be distinct bands of the same round the feet, shading off to the black of the leg, and by this time also about an inch of the muzzle will have become frosted too. This



LONK RAM.

change of colour goes on until some, at the age of three years, are perfectly white, whilst others remain a kind of steel grey.

Horns in the ram are considered to improve the appearance, but are not essential. They should rise out well at the back of the head, be smooth, and well-curled. Wethers at three and four years old weigh from 12 to 18 lb. per quarter, the mutton being of fine quality.

#### THE LONK.

The Lonk is a larger and heavier variety of the Blackfaced breed, which is found among the fells of Yorkshire and Lancashire, and parts of Derbyshire. It is black-and-white-faced, horned in both sexes, and carries a superior fleece of fine, moderately long wool, which is closer in texture and more springy and elastic than that of the Blackfaces. The yellow horns are strong and curled, but finer than those of the Blackfaces. The carcass is long with somewhat light fore-quarter and narrow loin. The fleece weighs about  $4\frac{1}{2}$  to 5 lb. on an average, but better fed animals clip 7 to 8 lb. and up to 11 lb. Three-year-old wethers make 18 lb. per quarter dead weight, and double that weight if specially fed.

#### LIMESTONE AND PENISTONE.

The Limestone and the Penistone breeds, although both now white-faced, are probably, like the Lonks, near relatives of the Blackfaced breed. The former

are found in the lower districts of Westmorland and parts of Derbyshire, and the latter on the borders of Lancashire and Yorkshire, near the town from whence they take their name.

#### WELSH MOUNTAIN.

The Welsh Mountain sheep is an indigenous variety, and no doubt at one time held exclusive occupation of the Principality. In modern times, with the progress of farming, larger breeds have been introduced into the lowlands and the finer pastures, but the Mountain sheep still holds its own on the hills, and has effectually resisted the well-intentioned efforts which have been made to "improve" it. The result of a cross with the Blackfaces was to increase both the wool and weight of carcase, but the former became coarse and the latter yellow. The Cheviot cross also produced greater weight of both wool and mutton, but the produce was too heavy for Mountain grazing, and the mutton also was rendered too light in colour.

Welsh mutton has, of course, a fame of its own which should not lightly be tampered with. No pure Welsh leg of mutton, we are told, should exceed  $4\frac{1}{2}$  lb. weight, and larger ones are doubtful in their origin. The true Welsh Mountain sheep is principally white-faced, but some have rusty-brown faces, some speckled, and others grey. The males are horned, and the ewes generally hornless. The

poll is generally clean, but sometimes a tuft is found on the forehead of the ram. The head is small and carried well up, the neck is long, the shoulders low, chest narrow, girth small, and ribs flat. The average weight of ewes is about 7 lb. per quarter. Wethers at three years old weigh 9 to 10 lb. per quarter. The average clip of wool is about 5 lb. per fleece.

#### EXMOOR.

The Exmoor breed is indigenous to West Somerset, and was at one time probably found over a much wider district. It has a white face and legs, taper horns curving downward and outward, close-set, long-stapled fleece, with wool well up to the cheeks, peculiarly rounded carcase, broad loins, and high necks. They are very hardy, and the ewes are prolific and good nurses, but the breed does not fatten quickly. The mutton, however, is of exceptional quality. At three or four years the sheep ordinarily weigh 12 to 15 lb. per quarter, and where specially kept and fed, up to 20 and 28 lb. The fleece weighs 5 to 6 lb.

#### DARTMOOR.

The Dartmoor, which probably came from the same original stock as the Exmoor, has been more crossed, and is generally larger in size. Indeed, it appears to be losing its "Mountain" character, and qualifying for entry into the regular ranks of the Longwools, though it still retains its hardiness and thriftiness.

CHAPTER VIII.  
THE SHEPHERD'S YEAR.  
AUTUMN.

Period of Gestation—Selection of Rams—"Flushing" the Ewes—Their Treatment—Management of In-lamb Ewes—Injudicious Feeding—Mouldy Hay and Rotten Turnips.

ONE is reminded of the old problem as to the priority of the hen or the egg in commencing an account of the year's work in the flock. In other words, does the shepherd's year begin with the lambing or the tupping season? It would be easy to argue plausibly for either contention, but without wasting time over the controversy we propose to assume that the year begins when the rams are put to the ewes.

It will at once be realised that the date at which the various events of the twelve months take place vary widely in the different districts and for different breeds. The lambing season—and consequently the tupping season—extends over at least four months, without taking into account the Dorset Horns which, as previously mentioned, are a law unto themselves. It is, of course, the conditions prevailing at lambing time which govern the date at which the rams are admitted to the ewes, the period of gestation ranging from 143 to

156 days, the average being 150 days. Among the Hampshire Down flocks, for example, lambing is expected to begin at New Year's Day, or soon after, and by the end of January is nearly over, and tupping commences therefore early in August. September is, however, the most usual month in the South and West of England, while further north October is more common, and among the mountain breeds November is the ordinary time.

#### SELECTION OF RAMS.

The farmer who aims at the steady improvement of his flock will be very careful in the selection of rams. As the bull is half the herd, so the ram is half the flock. Of course, in a pure-bred flock the choice of rams becomes a complicated matter, because so many points have to be considered, but in all cases it is of immense importance. Purity of blood in a sire, whatever his breed, is essential, because pedigree means, as a rule, impressiveness. A pure-bred ram may be relied upon to beget his like, and the longer his lineage, as a general rule, the more he can be relied upon, other things being equal.

Masculine character, indicated by a good ram's head and a strong scrag, with plenty of activity and standing well upon his legs—these are general points applicable to all breeds which a ram should possess. Broadly, the rams should be

chosen to suit the ewes, but in detail the ewes should be drafted carefully to mate with each ram. The number of ewes to each ram should average about 50 or 60. Of late the practice of using ram lambs has become common, and if they are strong and well fed and not put to too many ewes, the plan answers well, and no doubt the early maturing properties of the flock are increased. There is, however, some danger, unless great care is taken, of impairing constitutional stamina. In some cases ewe lambs have also been bred from, but this is very rare, and the advantage of the practice is extremely doubtful.

#### "FLUSHING" THE EWES.

The majority of successful flock-masters adopt the plan of "flushing" the ewes for about a fortnight before tupping, it being generally believed that a better crop of lambs is thus secured. A run over a rich pasture, or a supply of turnips, cabbages, or kale will answer well. A run in a field of rape is also recommended, and also a bite of white mustard, while if green food cannot be obtained  $\frac{1}{2}$  lb. of oats or  $\frac{1}{4}$  lb. cake daily per ewe will effectively answer the purpose. Some farmers take the rams away at night and give them extra food, such as bruised oats, during the tupping season.



## TREATMENT.

After the rams are taken away the success of the year depends very largely upon the treatment of the in-lamb ewes. Not only does the crop of lambs, and their healthiness and vigour when born, depend to an enormous extent on the conditions under which their dams spend the period of gestation, but the survival of the ewes themselves may be determined by circumstances occurring during the time they are in lamb.

The loss of a number of ewes in lambing is taken by farmers generally as inevitable, and if ten or twelve, or even a score, die it is considered merely as "bad luck" and quite unavoidable. But there is no other class of stock in which the percentage of loss in parturition is so great as among sheep, and it is certain that it might in many cases be reduced if greater care were taken of the in-lamb ewes. There is no doubt that the death of a ewe in lambing is often the result of injury done weeks and perhaps months previously, and the same remark applies also to dead lambs. Everyone knows, of course, how the effect of hounds running through a flock of in-lamb ewes will tell its tale, in lambing time, and much the same result may happen from less obvious causes.

## MANAGEMENT OF IN-LAMB EWES.

Three golden rules for the management of

ewes in lamb have been tersely put by Professor Wrightson as follows:—(1) A firm and dry lair; (2) plenty of dry fodder; (3) care, gentleness, and regularity in treatment. Something, of course, depends on the season. If the winter be very wet the flock is bound to have a trying time. Cold they can stand, and if well kept will thrive through very severe weather; but continual wet weather cannot fail to affect them. Flock-masters who have a run of sound old turf find it most useful for giving the ewes a healthy lair.

The feeding of the ewes up to lambing time is of the utmost importance. They should be spread not too thickly over the pasture and clover leys. It is essential to prevent them from gorging themselves with roots. It is almost a truism that a short crop of roots gives a good crop of lambs, the explanation being that when roots are very plentiful the ewes are apt to get too many of them. Hay should be given in small quantities, as if the appetite is first appeased by it the ewes will eat their roots with consideration. There is no need to give cake or any other concentrated or expensive food until after lambing. A run over a sound dry pasture, a ration of hay—beginning, say, with half a pound and increasing to one pound per head per day by the first of December—and a moderate supply of roots will provide all that the ewes need.

The aim is not to get them fat, but to keep them going in good healthy store condition.

#### DANGERS OF INJUDICIOUS FEEDING.

These rules are very simple, and it might be asked why should they ever be set aside, as no doubt they often are. The answer, of course, is that the farmer with every desire to do his best for his ewe flock cannot sacrifice everything to them, and other considerations in connection with the farm or the season may tempt, if not compel, him to modify them. A writer previously referred to has some very sensible remarks as to this which we cannot refrain from quoting. A heavy root crop, he observes, is in itself an inducement to both farmer and shepherd to feed the ewes liberally. In a sense they *must* be consumed, must be got rid of, and hence the known principle of giving roots in sparing quantities is neglected. Again, hay may be scarce, and the farmer, in his endeavours to make it last, delays cutting into his ricks. He knows by experience that, when once cut into, a rick soon goes, and he therefore delays making a commencement, and meanwhile the ewe flock suffers.

Farmers know the heavy expense of chaff-cutting and of purchasing food, and the vast importance of keeping a check upon outgoings; and hence they may go beyond the limits of legitimate economy,

and suffer later by a stroke of ill-luck at or before lambing time. Another example, showing how damage is done, in the face of knowledge, may be stated as follows:—The farmer is naturally anxious to get in his last sowing of wheat, and as he relies to a great extent upon his ewe flock to clear the ground of the root crop, he runs the risk, and pushes on the ewes, so as make room for the ploughs. The probable consequence is a loss among the ewes and lambs later on. Even good farmers often do what they ought not to have done, and leave undone what they ought to have done—and this not so much from want of knowledge, as because of the exigencies of the entire farm.

#### MOULDY HAY AND ROTTEN TURNIPS.

It is hardly necessary to say that wet or mouldy hay or rotten turnips are very dangerous for in-lamb ewes. In some seasons, of course, both hay and roots are scarce, and then the winter keep is bound to be expensive. As substitutes rough cotton-cake at the rate of about half a pound to one pound per head per day, according to the state of the weather, with oat-straw or pea-haulm are recommended. Pea-chaff, or the outer husk of peas, is used by some farmers, and malt-combs mixed with chopped straw by others. There must in any case be a mixture of a concentrated food and a bulky one, to make healthy keep for ewes.

## CHAPTER IX.

## THE SHEPHERD'S YEAR.

## WINTER.

The Lambing Pen—South-country Method—North-country Practice.

HAVING carried the ewes through their time, it is necessary to prepare for the season of lambing which, as before mentioned, may come in January or at any time during the spring, according to the district and breed of sheep kept. Preparations are, in fact, made long in advance. The position of the lambing pen—unless the old plan of providing it permanently in or near the rick-yard is adopted—must have been decided in the previous summer. There are advantages in the adoption of either the permanent or temporary plan—in one case the main advantage being proximity to the homestead, and in the latter case proximity to the food. But to secure the advantage in the case of the temporary pen it is necessary that its position should have been carefully thought out. It should be near one or two corn-ricks, and also close to a field of swedes or late turnips, and if possible the site should have a gentle southward slope.

## A SOUTH-COUNTRY LAMBING PEN.

The Hampshire or South-country plan is well

described by Professor Wrightson. The enclosure consists of a double row of hurdles stuffed between with straw, and kept firm by a few posts and rails. About two feet from the outside wall, and on the inside, are driven six-feet posts carrying a head rail or plate, and resting on this plate, and upon the outside hurdles, with a sufficient run or slope, thatched hurdles are fixed, thus forming a continuous narrow shed, which is again divided by hurdles into copes or cells. These are best open to the south and east, and backed to the north and west. Outside the coops, and inside the enclosure, the space is divided by hurdles into four or five good-sized yards, and a straw rick ought to occupy the centre, the shepherd's portable house being drawn up in close proximity to the enclosure.

The most forward ewes are brought into the pen every night and lie upon straw. A good-sized heap of swedes is provided, and hay racks or cribs are placed around so that the ewes may have plenty of fodder when they come in to shelter in the afternoon. As soon as a lamb is born it is removed with its dam into one of the coops, where they remain for three or four days until the lamb can follow its mother without difficulty and the two know each other thoroughly. They are then transferred to one of the larger divisions, and the coop is vacated for the next occupants.

## NORTH-COUNTRY PRACTICE.

A good example of North-country practice where a permanent lambing yard is provided is given by Mr. A. S. Alexander in a paper on the "Treatment of Border Leicester Ewes and Lambs." For a lambing-fold for a flock of about 300 ewes a small field of half an acre is chosen behind the homestead. At the north side there is a high stone wall, and on the east a thorn hedge, which effectually breaks the force of the wind. Along the north wall are erected a row of twenty houses or pens, the roofing of which is made by fixing timber from the top of the wall to the posts which form the doors and fronts of the pens. One door serves for two pens, there being in the interior a middle division which does not quite come to the same line as the walls in front. The door is closed by means of a small hurdle or "flake," which moves between the partition and the inside of the walls.

The roof is thickly thatched with rye or wheat straw, tied in bundles, and on the outside or front bunches of straw resembling sheaves are set on end, so that their tops meet the thatch; and when fixed in this position a most effective protection is made. On the west and south side of the enclosure a fence of larch posts with three spruce rails is erected of about the same height as an ordinary fence. Bunches of straw are fixed all along inside the fence and hedge

so that three sides of the enclosure are practically formed of straw, the fourth being the row of pens. The enclosure is provided with two gates, one for driving in the ewes in the evening and the other for turning out the ewes and lambs into a field of seeds after a day or two.



## CHAPTER X.

## THE SHEPHERD'S YEAR.

## SPRING.

Care at Lambing Time—Mal-Presentation—Food for Young Lambs—Weaning—Docking or Tailing.

On hill farms, where the lambing does not take place until April or May, farmers are apt to trust too much to the hardiness of the sheep and the chances of fine weather. The more careful, however, have a number of small pens or "keb-houses" erected on the lambing ground, so as to provide protection in bad weather. Such pens or huts can be made with very little trouble or expense. With a few hurdles and some straw or turf temporary shelter can be provided which may save the lives of many lambs. It goes without saying that lambing is an anxious and arduous time for the shepherd. He must be watchful of his charge day or night, for upon his vigilance the lives of many ewes and lambs may depend. He must of course know his sheep and know his work, and no mere description can give an idea of the hundred and one details which can only be learnt by practical experience.

## CARE AT LAMBING TIME.

It is well, however, to bear in mind that par-

turition is an ordinary process of nature, and not a malady which necessarily requires what may be termed surgical treatment. It is, of course, attended by considerable uneasiness and frequently pain, but in ordinary cases the ewe merely wants watching and attending to without any actual assistance. Consequently there should be no fussiness or impatience, even in cases where the period of labour is prolonged. This frequently ends in an easy birth, and it is only needful to be watchful and to take the lamb, see that its mouth is clear, and its breathing all right, and put it to its mother. The lamb is taken to a crib, and will be followed by the dam. It will then struggle to its feet, and commence to suck, or if it should not do so, or the mother, as is sometimes the case with a first lamb, seems to show aversion, it must be helped to do so.

The ewe should have a few swedes, or a mangel, or one or two turnips with a little hay. When a ewe has an insufficient supply of milk, cow's milk may be given to the lamb, but it must be used with discretion, as there is a risk of deranging the young digestion. If a lamb is weak it should be placed near a fire, and a teaspoonful of gin in a little warm water, sweetened with moist sugar, may be given with good results. Lambs frequently have diarrhoea, and in such cases a teaspoonful of castor oil is beneficial.

## MAL-PRESENTATION.

When all goes well, *i.e.*, in ordinary cases, the shepherd's duty is confined, as has been said, to that of a watchful attendant, but of course there are always cases, more or less numerous, when things do not follow their natural course. The most common difficulty is that of false or abnormal presentation, which may occur in various ways. In such cases the active assistance of the shepherd is necessary, but it must be given with the utmost care and gentleness. Before assisting a ewe in lambing the shepherd should anoint his hands with fresh lard or oil, the hand should be scrupulously clean, and the finger nails short.

## FOOD FOR YOUNG LAMBS.

During the first fortnight the lambs subsist entirely upon milk, but they soon begin to nibble at food. The ewe should now be liberally fed in order that her milk may be both rich and plentiful, and an allowance of a pound of cake per day in addition to hay and turnips is a wise outlay. Ewes and lambs are kept on the lambing ground until they have both quite recovered, when the most usual practice is to put them first on a run of fresh grass, if available, and afterwards on turnips. But the treatment varies so greatly in different districts that it is difficult to lay down any general rules.

The best method is to describe the practice of one or two representative farmers in various parts of the country.

#### WEANING.

The time of weaning the lambs varies according to the time of lambing, but generally the earlier the lambs are dropped the longer they stay with the ewes. Thus, a lamb born late in March or early in April may be weaned in June, or at from ten to twelve weeks old; but it would hardly be possible for a lamb dropped in January to be weaned in March. Of course, the lambs in any case are of varying ages when weaned, as they are all weaned together. The plan of taking the ewes straight away altogether out of hearing of the lambs and placing them on dry keep is rather severe, but it is almost inevitable where open grazing is the rule. When the flock is between hurdles, the lambs running forward before the ewes, a simple plan is to stop the "creeps" for a few hours each day, and thus accustom them gradually to separation.

In this way by a little judicious management the lambs are weaned with very little inconvenience or suffering on either side, and no doubt both they and their mothers do better in consequence. In this, as in all things, the most gentle and considerate method, wherever possible, is the best to adopt. A farmer or a shepherd has naturally a love for animals, or he

is unsuited to his vocation, and will not only consider them from motives of kindness, but also because he knows that in this case virtue is its own reward, and that the more gently and considerately they are treated the better they will thrive.

#### DOCKING OR TAILING.

Lambs are usually docked or tailed when about a month old, and practically the sooner this is done the better, provided it is not done in frosty weather. The operation is necessary for the comfort of the sheep, to whom a long tail in a state of domestication is a useless and inconvenient appendage. It is simple and instantaneous, and as lambs will begin sucking immediately it is effected it is reasonable to assume that it gives them practically no pain. In some breeds the fashion is to dock very close, the object being to secure better handling when fat. In the opinion of many, however, this fashion is carried to extremes, and it is probably more judicious to leave about three inches of tail. It may be done with a sharp knife, but it is claimed that less blood is lost, and healing promoted, by the use of a hot sharp iron pressed through the tail.

The castration of ram lambs is sometimes performed at the same time as docking, but it is better postponed a little later, as the two operations at once are rather severe treatment.

## CHAPTER XI. THE SHEPHERD'S YEAR.

### SUMMER.

Washing—In Streams—By Tanks—Shearing—Storing Wool—  
Dipping—Sheep Scab Prevention.

NEXT to lambing the most important event in the shepherd's year is shearing. This is generally preceded by washing, which should be done about eight or ten days before the sheep are shorn so as to allow the yolk to rise again in the fleece. The objects of washing are to cleanse the wool and improve its lustre and also to remove encrusted matter and dirt from the skin of the sheep. Of late years the practice of washing, which was at one time almost universal, has been a good deal criticised, and some flock-masters have abandoned it as unnecessary.

### WASHING.

The fact that the bulk of imported wool is delivered in an unwashed state has naturally called attention to the fact that the manufacturers are as ready to deal with it unwashed as washed, although they offer, of course, a considerably lower price. There are good arguments for and against the

practice, and every farmer must decide for himself on which side his interests lie. It is important to remember that wool which has not been washed must be carefully sorted, and defective and dirty pieces removed.

### STREAMS.

There are various methods of washing sheep, but the pool is still the most common. Where there is a stream a pool is made by putting a dam across at a spot where the banks at each side are of sound turf and afford easy access. There should be a depth of about three feet of water, and it is essential that the bottom is hard and gravelly and the water clean. A muddy bottom and dirty water will soil instead of cleanse the wool. The practice of men going into the water is more prevalent in the north than in the south of England. Where it is adopted there are generally two or three men—the shepherd and one or two assistants—in the water, with two others to catch the sheep and hand them to the washers. Every sheep is passed through the hands of each of the washers, and after being thoroughly dipped and washed escapes on to the opposite bank. Where the men do not enter the water they are supplied with implements like rakes without teeth, with which they scrub and dip the sheep while in the water until they are considered clean.

## TANKS.

There are various contrivances for washing sheep in tanks or tubs, and this plan is not only of course adopted where there are no natural facilities for pool washing, but also by some farmers as preferable. A plan recommended as satisfactory is to provide two tanks, each capable of holding, say, five sheep. The sheep are placed in tank number one and washed in the usual manner, they are then plunged into the second tank which is kept constantly supplied with clean water. The first tank should be kept as greasy as possible, only as much water being added as the sheep take out. The "yolk" of the fleece is a kind of natural soap, and is quite sufficient to wash the sheep effectually if advantage be taken of it.

## SHEARING.

Shearing follows closely upon washing, just sufficient time being allowed to intervene to allow the yolk to rise again in the wool. Care must be taken that in the interval the sheep are kept on dry pasture without banks against which they may rub and get their coats dirty again. The shearing time may be said to extend from the middle of May until the end of July, varying with the district, kind of sheep, and season. The new growth of wool ought to be well started before clipping begins. In the case of exhibition sheep, shearing takes place at



abnormal times, but they have usually to be housed or protected in some way. It is risky to shear too early, as if cold or wet weather immediately follows the sheep are likely to be injured in health, or at any rate put back in condition.

It is not necessary to describe the art of shearing, for it is certainly not possible to learn it from description. It requires considerable training and practice to become an expert shearer, and it is much to be regretted that like some other of the manual arts connected with agriculture it is a good deal neglected by the present generation of farm hands. In these days of "technical education" more attention might well be directed to such necessary arts as shearing, ploughing, thatching, and the like. Every farmer ought to be able to perform any of these acts, not because he necessarily requires to do them, except in a case of emergency, but because he cannot effectively superintend the work of his men unless he is able, at a pinch, to show them how to do it.

#### STORING WOOL.

In the "good old times" farmers very often kept their wool for a considerable time, sometimes for years, waiting for a rise in the price. There is no temptation in these times to do this, for it was always a somewhat risky business to store wool unless it was put away with very great care. The

safest plan undoubtedly is to dispose of each clip at current prices.

#### DIPPING.

One other operation must be mentioned, namely, "dipping." This may be done at almost any time, but it is most usual in the latter part of the summer or the early autumn. There is an advantage in doing it soon after shearing as the wool is then shorter. The object is the destruction of sheep ticks and the promotion of a clean and healthy condition of the skin. It is also a preventive of sheep scab, a disease the existence of which is really discreditable to sheep farmers, as it is easily prevented, and would not exist if proper care and attention were universal. Nowadays home-made dips—like everything else home-made—have been superseded by purchased dips, of which there are several widely known and well advertised.

## CHAPTER XII.

PRACTICAL EXPERIENCE AS RELATED BY  
FLOCKMASTERS.

Oxford Downs—To Gain Success with Shropshires—Leicesters and Border Leicesters—Ram Breeding—The Hampshire Down—Hints on Fattening.

IN the belief that a description of the actual practice of experienced and capable men is the most useful method of giving valuable information, we propose to devote this chapter mainly to notes made by some of the most successful flockmasters in the country. It is hardly necessary to tell any farmer that it is rarely possible to imitate exactly on one farm what is done on another.

Every farm has its own peculiar conditions, and its occupier must think out for himself the best method of managing it. But a knowledge of what others do, and especially those of most experience and capacity, will always provide hints which may be well taken advantage of.

The management of sheep might be divided under two main heads, viz., sheep on arable land, and sheep on pasture. It would perhaps be more accurate to say that there were three categories. A

large number of sheep never; or hardly ever, go on to ploughed land or between hurdles at all—notably, of course, mountain and hill sheep.

On the other hand, a considerable number of sheep spend their lives between hurdles, and never go on to pasture, or if so for very short periods. But the largest number of sheep probably are those which might be classed under the third heading which live under the mixed system, and are kept sometimes on arable land and sometimes on grass.

#### MANAGEMENT OF OXFORD DOWNS.

One of the most practical farmers in the country was the late Mr. Charles Howard, of Bedfordshire, who kept a flock of about 400 Oxford Down ewes, and the details of his management may well form our first example. The ewes were generally put to the ram about the second week in August, and from that time, with the run of the stubbles, were the “scavengers of the farm.”

Some white peas were grown for the rams, and immediately these were harvested, the stubble was ploughed or dragged, and mustard sown, which would be ready at the end of September, and on this the ewes were folded at night. After this was disposed of they ran the grasses, and were folded at night on the land where the mangels had been drawn, a few kohlrabi being generally sown with the mangels and left for the ewes. After this they

generally had the cabbage-sprouts, and were then supplied with some dry food.

Near lambing time the ewes were placed in comfortable yards at night, and had a supply of chaff and straw, with some bran, oats, and mixed cake. Previous to lambing they got as few roots as possible.

After lambing the ewes ran upon grass adjoining the yards, and when the lambs were strong enough they were placed on the roots, with hurdles for the lambs to run forward on the tops, and had a supply of bran, oats, and cake crushed very small. Mr. Howard considered it desirable to get them out of the yards as soon as possible, though the exact time depended, of course, upon the weather and the strength of the lambs.

After the turnips were consumed the flock was placed upon winter oats and tares or on the grasses, until the clovers were ready, the ewes being plentifully supplied with mangels. The lambs were weaned in June, and placed as soon afterwards as possible on the aftermaths of clovers and grasses, when a supply of cabbages was carted to them. This lasted until September, when a few early white turnips were ready, on which they were folded at night.

The feeding tegs got permanently settled about the middle or end of October upon roots, which

were sliced for them, and had a supply of clover, chaff, and  $\frac{1}{2}$  to  $\frac{3}{4}$  lb. mixed cake and split peas, increased as the season advanced to 1 lb., being then composed of mixed cake, split peas, beans, peas, maize, and a little malt. The ram-tegs were a little more generously treated. The breeding ewe-tegs got a good supply of clover chaff and about  $\frac{1}{2}$  lb. of mixed corn and cake. The feeding tegs were ready for market between February and April, being about 12 to 14 months old. The earlier ones were sold in the wool, and the later ones shorn.

#### TO GAIN SUCCESS WITH SHROPSHIRES.

Mr. David Buttar has met with such remarkable success both in the showyard and in the sale-ring with his flock of Shropshires, that it is interesting to take a few notes from a lengthy description of his system of management, which he contributed to "The Book of the Farm." He keeps a large stock of sheep on his two arable farms at Coupar-Angus, as in addition to his famous flock of pedigree Shropshires he buys a considerable number of other breeds of sheep for winter feeding.

The produce of the Shropshire flock are all reared and sold for breeding purposes, except a few culls which are fattened. The stock ewes during the winter are fed chiefly on the foggage of the farm, with no extra keep, except perhaps a little hay

and a few turnips during a snowstorm. About the beginning of February—a month before lambing—a few fresh yellow turnips (swedes being strictly withheld) are fed twice a day with a little hay, the allowance being gradually increased up to about 20 lbs. each.

After the ewes have lambed, a little linseed cake and oats (crushed) and some bran twice a day are added to the ration, increasing the feed by degrees until they have a daily allowance of from 1 to  $1\frac{1}{2}$  lbs. of this mixed food for each ewe. This continues until there is plenty of grass, when it is stopped as they are apt to get too fat. The lambs, however, continue to get about  $\frac{1}{4}$  lb. each daily, which they have access to through hurdles made for the purpose.

After the lambs are weaned—in June or early July—the ewes are put on the barest pastures until September, when they again have better keep to bring them into condition for the rams, which are put to them about the first of October. The lambs, on the other hand, are put on the best pasture, and their daily allowance of cake, bran, &c., continued, so as to keep them growing. When the pastures get bare in autumn they have an allowance of vetches, rape or cabbage, which is always grown for them.

During winter the ram and ewe lambs are folded

in separate fields, but fed much in the same way, their chief food being a mixture of cut hay and pulped turnips, with a little thousand-head cabbage. In April the young rams are generally shorn, and for a week or two kept under cover. They are let out on to the fields again in May, when the weather gets warmer, and fed on early grass, winter vetches or with a little cake if thought necessary.

For feeding purposes Mr. Buttar generally buys in two-year-old Blackfaced wethers. They are all fed on pulped food, none ever seeing a turnip in its original shape. They are generally bought in about October or November, and as all the foggage on the farm is required for the breeding flock, the wethers are at once folded on the stubble, and have prepared food.

At first they are fed sparingly till they become accustomed to the food; after a few weeks the quantity is gradually increased until they get their full allowance, which is about 1 lb. cut hay and straw, 10 lb. pulped turnips, 1 lb. cake and crushed grain, with a little salt. The cost of this is reckoned at  $1\frac{1}{2}$ d. per day per sheep or  $10\frac{1}{2}$ d. per week; but from this must be deducted the value of the manure on the land, which is reckoned at one-third, leaving a nett cost of 7d. per week, or say 2s. 6d. per month.

#### LEICESTERS AND BORDER-LEICESTERS.

Mr. T. H. Hutchinson, a Yorkshire breeder, has



long kept one of the most famous flocks of Leicesters. In an account of his system of management he states that he generally puts about 100 ewes to the ram about the last week in September.

In addition to the lambs he breeds he buys in from 150 to 250 to "turnip" during the winter, and as he cannot buy pure Leicesters he usually gets "north" lambs, i.e., lambs bred from Cheviot ewes with three crosses of the Border Leicester. These do remarkably well on turnips, and go off fat in February and March, weighing from 16 lb to 22 lb. per quarter. The ewes run on the grass in the autumn, and have roots with cut oat-straw given in addition before lambing, also hay if it can be spared.

After lambing they get roots with a mixture of malt combs, linseed cake, bran, oats, and cut hay until the pastures are good enough to keep them going. The lambs are weaned in July, either on to some after-grass or good old pastures, until cabbages or thousand-head kale are ready. After that they go on to turnips and finish on the swedes.

As soon as they go on the cabbage they get a mixture of crushed tail corn, linseed-cake, malt-combs, bran, &c., made into a kind of lamb food, which is considered preferable to cake alone. When put on turnips the roots are all cut, the turnips being stored in October and early part of November in small pieces. Hay and straw are also given.

## RAM BREEDING.

One more famous sheep-breeder may be quoted—Mr. John Treadwell, of Buckinghamshire. His flock of Oxford Downs is kept largely for ram breeding, but as his farm consists of about two-thirds pasture his practice is interesting. About the middle of August the ewes are separated into lots, according to their suitability to the different rams to be used, this being considered the most important factor in the whole matter of breeding.

About the beginning of November when the ewes are all served, they are put together, and clear up mangel-tops, stubbles, seeds, or anything there is for them. When this is done they are again drafted into smaller lots about the pastures until they come in to the lambing pen. When they come into the lambing pen they get a little hay or straw according to the weather and their condition; and they run on the pastures by day. As soon as they have lambed they return to the pastures, and have about 2 pints of oats each, and hay if they require it. The oats are continued until April, when they are gradually taken off, as the grass comes on. They are shorn about the end of May, and the lambs are generally weaned in June—the ewes being put on vetches or clover, or a rough pasture, or anywhere where they can be kept cheaply until tupping time comes round again.

The draft ewes get better treatment at this time. They are fed on the pastures, sometimes getting some cake and hay until they are sold off fat, or put to roots or cabbage to finish. The lambs when weaned are separated, the ram lambs getting a little cake and corn at once, but the ewe lambs getting nothing but grass as a rule.

The ram lambs have their cake and corn increased slightly as the season advances, but they do not get much attention until after the shearling rams are sold in August, when they go on to arable land as soon as some rape or turnips or other food can be got for them. They then follow on to swedes and mangels until about the beginning of April, when, if weather permits, they are shorn, kept in for a few nights and out in the day, but kept out entirely as soon as possible. They go on kale, then to rye, and then to vetches with which they get some mangels, until the cabbages come, when these take the place of mangels.

About sixty of the best are sold by auction at home on the first Wednesday in August, and the others are sold privately, usually rather sooner.

The ewe lambs generally go off the pastures on to rape in October, and then on to turnips, with which they get a little cotton cake. In the spring about half are selected for the flock and fed on vetches or seeds or pasture until turned into the

ewe flock. The draft ewes are put into the pastures, and sold during the summer, either for stock or to the butcher.

#### THE HAMPSHIRE DOWN.

Instances might of course be multiplied indefinitely, but space will allow only one more example, and we may take that of the Hampshire Down flock of the late Mr. W. Parsons.

The rams were turned among the ewes on August 1st, care being taken as to suitable mating. At that time the ewes would be on late vetches or rape, or aftermath clover, following the ewe lambs, and they ran on the stubbles, but did not enter the young seeds. The lambs were fed on the seeds during the day, and when the tares and clover were gone, they got at night a fold of rape and turnips sown together.

When the ewes had fed by day on the stubbles they followed the lambs at night, and cleared up their folds for them. At the end of September the whole flock was folded on the aftermath sainfoin in the day time (the young animals going on before) and on turnips at night. This food lasted until Christmas. When the sainfoin was finished the lambs received turnips and  $\frac{1}{2}$  lb. of cotton-cake.

When lambing time approached, a little before New Year's Day, the forward ewes were separated

from the others, lot by lot as they came on, and were placed in a straw fold at night. As they lambed their places were taken by others, and in about a week after lambing the couples were put upon turnips, with a straw fold at hand for shelter in bad weather. Ewes with twins got 1 lb. of cake daily, increasing in the course of a month or six weeks to  $1\frac{1}{2}$  lb. The other ewes received  $\frac{1}{2}$  lb. of cotton cake, and they had in addition pea chaff, at the rate of two bushels of 16 lb. per bushel per 100 ewes. The twins got corn as soon as they would eat it, with cake and split peas.

The usual weaning time was the second or third week in April, and until then the ewes got as many turnips as they would eat, with chaff in addition, and swedes when the turnips were over.

## DENTITION CHANGES.



I.  
Incisors (Temporary) of Sheep at one  
year old.



II.  
Two-Toothed Sheep, 15 months, (Central  
Permanent Incisors well up.)



III.  
Four-Toothed Sheep, 1½ years old.  
(Second pair of Permanent Incisors cut.)



IV.  
Six-Toothed Sheep, 2½ years old,  
(Third pair of Permanent Incisors cut.)



V.  
Full-Mouthed Sheep, 3½ years old  
(Corner Incisors cut.)

## CHAPTER XIII.

## DENTITION CHANGES.

HOW TO TELL THE AGE OF SHEEP FROM THEIR  
TEETH.—NAMES OF SHEEP AT DIFFERENT AGES.

THERE are certain points connected with the dentition of sheep which ought to be understood by every practical farmer, but there exists no little confusion among stock owners as to what are the real indications of the teeth as regards age. Highly-bred and liberally-fed animals complete their dental changes much earlier than unimproved sheep living under conditions closely akin to the natural, and it may be accepted as a fact that as sheep are better bred and better fed they exhibit greater precocity in dentition, as well as the other qualities associated with early maturity. To put it in another way, modern sheep are found to be as far in advance of their ancestors in detail as they are in the gross, and their teeth, as well as their frame and flesh, are developed earlier.

Sheep are now marketed at a much earlier age than formerly. The epicure now sighs in vain for his saddle or leg of four-year-old South Down, and we rarely see a sheep's head at the butcher's

containing a full set of permanent incisors. When we do, it probably belonged to an old ewe.

The sheep, when dentition is complete, possesses thirty-two teeth—eight incisors in the front of the lower jaw, and six molars on either side in the upper and lower jaws. This is the ordinary ruminant arrangement, and, as in the ox, what is called the dental pad forms the opposing surface on the upper jaw. In the sheep, this dental pad is relatively smaller, firmer, and less spongy than in the ox.

The incisors are flattened on the crown, convex on the outer surface, and somewhat chisel or gouge-shaped on the inner, a feature which, taken in conjunction with the angle at which they are fixed, the extreme thinness of the lips, and the cleft in the upper lip, admirably adapts them for cutting, and for grazing close to the ground, and on very short grass. This is the reason why sheep can get a living where cattle would starve, and also why sheep are so commonly the hosts of parasites, which cause such diseases as husk, rot, tapeworm, and parasitic gastro-enteritis.

It has frequently been noticed that "shuttle-gobbed" sheep, which, from the formation of their mouth, cannot graze so close as their fellows, escape rot and other parasitic diseases from which the remainder of the flock suffer.



At birth, the arrangement of the incisor teeth of the lamb is peculiar. Professor Brown says:—"Generally the whole temporary set of teeth may be recognised, but only in outline, as they are nearly covered with the gum. The central incisors are most advanced, and next in order come the laterals, leaving the middle and corner teeth considerably below them." Very often the cutting edges of the third and fourth pairs are through the gum, but occasionally none are visible. In a short time, however, they make their appearance, and by the time the lamb is a month old all the temporary incisors are well up, and there are three molars on each side of the upper and lower jaws.

Except where great accuracy is required, as in determining the age of an exhibition animal, the molar teeth are rarely taken into consideration, but, as pointed out by the above-mentioned authority, from the time of the perfect eruption of the temporary teeth at the age of one month, to the cutting of the first pair of "broad" teeth or central permanent incisors, at the age of from twelve to fifteen months, the only changes which will guide the examiner are those which affect the molar teeth. At three months the first permanent molar, the fourth in situation, is cut, and is to be recognised by its recent appearance in comparison with the tooth immediately in

front of it—the third temporary molar—which shows signs of wear.

During a period of five or six months from the cutting of the fourth molar there is no change, except in the growth of the teeth, and of the jaw, which results in leaving a space behind the fourth molar, which, at about the age of nine months, is occupied by the fifth molar. The temporary incisor teeth are remarkable for their small size and whiteness, but these are not so noticeable as when they, at fairly well ascertained periods, give place to the larger permanents, which are more adapted for the harder work of feeding on roots and stronger herbage.

Fig. 1, page 104, shows the appearance of the temporary incisors in a well-preserved mouth of a sheep about one year old. The incisors, especially the middle and central teeth, are worn on their upper surfaces. In sheep fed on turnips some of the incisors often get broken off, and in very forward animals the central permanent incisors are cut, but they are never perfectly level at this age. If the molars are examined it will be seen that the fifth permanent molar stands well out of the jaw, while the teeth in front of it are all worn on the surface.

The first pair of broad teeth, or central permanent incisors, are usually cut soon after one year old, and are well up at fifteen months, as shown in the

illustration on page 104. The permanent teeth are formed within the sockets in the jaw some time previous to their eruption, and it is their pressing against the root of the temporary incisors that gradually causes their absorption. At eighteen months the sixth permanent molar is cut, and the recent appearance which this tooth presents is better evidence of this age than can be obtained from the incisors.

Occasionally, in very forward mouths, the second pair of broad teeth will be cut at eighteen months, but in other cases there will be no signs of their appearance until the sheep is approaching the age of two years. There is always room for doubt whether the sheep is eighteen months or two years old, but between these ages there are important changes in the molars which supply the information.

The sixth molar begins to protrude at about eighteen months, and shortly afterwards the two anterior temporary molars give place to the permanent teeth, and the third temporary molar is a mere shell covering the top of the permanent tooth.

The presence of six broad teeth may usually be taken to indicate  $2\frac{1}{2}$  years old in ordinary commercial sheep, but Professor Brown says that "These teeth may be looked for in many sheep which are entered as not exceeding two years old,

and no objection can be made on this ground, although the third pair of incisors are not, under ordinary circumstances, present before two years and three months.

"Some difficulty may arise in the mind when finding these appearances in sheep which are in adjoining pens, or even in the same pen. But in such circumstances no hesitation need be felt in accepting the evidence of the molars and disregarding that of the incisors."

The cutting of the corner incisors, or fourth pair of broad teeth, takes place, on an average, about nine months after the laterals are in the mouth, and may be taken as an indication that the sheep is over three years old. But in some cases the corner teeth do not appear until the animal is nearly four years old, so that there is a possibility of an error of nearly a year where the corner incisors alone are taken into consideration. No difficulty, however, is experienced in deciding whether the corner incisors represent three years or four years, if the state of the other incisors are taken into account.

At four years old the six broad teeth will show signs of wear, the middles and laterals showing well-marked tables in the place of sharp cutting edges, and the central incisors especially worn hollow on their upper surfaces; while the recently

cut corner incisors, supposing their eruption to have been delayed, will present a marked contrast to the rest of the teeth that have suffered from attrition.

After the sheep becomes full-mouthed there is no method of judging of the age with unfailing accuracy, for the teeth rarely remain perfect for any length of time, and particularly in the case of sheep folded on roots, some of them becoming broken or lost, and the sheep is then said to be "broken-mouthed."

Farmers, in classifying commercial sheep, usually distinguish them as two-toothed or one-shear sheep or one-year-old, four-toothed or two-shear or two-year-old, and so on, the names differing in different districts.

#### NAMES OF SHEEP AT DIFFERENT AGES.

Sheep names differ somewhat according to the relations of the time of shearing to the time of tooth eruption and replacement, also from the fact that in some districts lambs are shorn in their first year and others not. This introduces some confusion, and Scotch terms are somewhat different from English ones. A "full-mouthed" sheep is one in which all the permanent incisors are in place; a "broken-mouthed" sheep is one in which the teeth are beginning to drop out; a "two



toothed" sheep is one having two large or permanent teeth.

The lamb when about a month old possesses eight temporary incisors in the lower jaw, meeting against the dental pad, and usually termed "milk teeth." Dentition is to some extent affected by the nature of the feeding. When sheep are on poor keep, and in late maturing breeds, the centre pair of incisors are shed at about a year old, and are replaced by two large permanent teeth. At about two years old a second pair of large teeth are acquired; at three years old a third pair; at four years a fourth pair, when the animal is termed "full-mouthed." Liberally fed and early maturing sheep acquire their first pair of permanents at about ten months, the second at eighteen, the third at twenty-seven, and the fourth at about three years.

A "tup" is an uncastrated male, and from birth to weaning we have "taup lamb," "ram lamb," "pur lamb," and "heeder"; from weaning to first shearing "hogg," "hogget," "hoggerel," "top-teg," "lamb hogg," and "tup hogg"; first to second shearing, "shearing," "shearling," "sheer hogg," "dinmont," "ram-tup," and "one-shear tup"; second to third shearing, "two-shear ram"; third to fourth shearing, "three-shear ram," or "three-shear tup"; and afterwards, "aged tup."

"three-shear tup"; and afterwards, "aged tup." At different periods, in the order named above, the emasculated male is a "hogg lamb"; "wether hogg," or "he-teg"; "shearling wether," "shear hogg," "wether hogg," "wedder hogg," or "two-toothed wether"; "three-toothed," or "two-shear wether"; "four-toothed wether," or "three-shear wether"; and "full marked" or "aged." "Wedder," "wether," and "he-teg" are terms for the same class of sheep used in different districts. A "thave" or "theave" is a female from her first to second shearing, and she is also known as a "shearling ewe," "double-toothed ewe," and "gimmer."

## CHAPTER XIV.

## SOME COMMON DISEASES OF THE SHEEP.

## BLOWN OR HOVEN.

WHEN on clover the shepherd has to be keenly on the look-out against sheep being blown or hoven. The first growth of clover is the most dangerous, perhaps, partly from the avidity with which sheep attack it, as it comes as a welcome change after the staler food of winter and early spring.

There is no doubt that rapid feeding tends to hoven; for when eaten with undue haste, fermentation producing an unusual amount of gas is set up in the place of normal digestion, and so rapid may this be that we have seen sheep burst within a quarter of an hour of being turned into a fresh piece.

One of the best safeguards is to turn the sheep on to the clover when they already have their stomachs well filled with other food, so that they will feed with less avidity and be sooner satisfied. For some reason stormy days are more dangerous than still ones, though no one has ever given a satisfactory reason for it.



Whenever a shepherd sees a sheep begin to froth at the mouth he should remove the flock without delay. Most shepherds now keep a little carbonate of soda or other alkali in readiness for sharp cases, while others depend upon a trochar to get rid of the gas. At any rate, with careful observation and treatment, there is no need for any loss of life.

#### BRAXY OR SICKNESS IN SHEEP.

Braxy or "sickness" is found over a wide area of country. It is said to exist in Cornwall and to a lesser degree through the whole of the South of England. It is more prevalent in the South of Scotland, and is endemic (confined to a particular district) throughout the West Highlands. It is said to prevail along the West Coast of Ireland, and is very severe in Iceland, the Faroes, and the West Coast of Norway.

Professor Hamilton, Chairman of the Departmental Committee appointed by the Board of Agriculture to investigate the disease, mentions that wherever the influence of the Gulf stream is felt, there braxy may be found. A disease resembling it, and which may be identical with it, is said to infest certain areas in New Zealand. It is also reported from Mecklenburg-Schwerin.

Braxy is the most terrible scourge among sheep in this country, and at its chief centres, the West

and South of Scotland, the death rate is often 20 per cent. among the first year's sheep, and may at times almost amount to total annihilation.

Sheep under one year (called hoggs in Scotland and tegs in the South) are the chief sufferers from braxy. It commonly attacks those that are in the best condition, and the mutton is eaten with impunity by shepherds, their dogs, and other domesticated animals. The disease runs its course with remarkable rapidity—the first intimation, in fact, is generally the finding of the dead animal. Putrefaction appears to set in immediately after death.

Under natural conditions, therefore, opportunity is seldom afforded of studying its symptoms, but all accounts seem to agree in describing the first symptoms to be a short step followed by an unsteady gait and a tendency to lay down and get up suddenly.

The foregoing particulars describe generally the information that was to be obtained when the Committee began its enquiries in 1901—before that date the cause of louping-ill had not been discovered; but in this country the bacterial character of braxy had been established by Professor Hamilton, who confirmed the discovery of the specific bacillus by Ivar Neilson in Norway in 1888.

It had previously been suspected that various

diseases passed under the name of braxy, and this proved not only to be the case, but, further, it was discovered that louping-ill, braxy, and several other diseases, as yet only partially examined, form a most interesting and important group, closely allied, all acquired through the fodder, all caused by anaerobic bacteria whose habitat is in the alimentary canal, and all of which are subject to the peculiar seasonal action of the blood associated with louping-ill.

With reference to this group of diseases, it is said, the side issues that have cropped up show how little the diseases to which sheep are liable are understood—how much, in fact, they are misunderstood—and what necessity there is for more extended and trustworthy knowledge of their nature and cause.

From a pathological point of view, they are a perfect mine of wealth, are fraught with scientific problems of the highest interest and importance, and are most suggestive of what may turn out to be a new light on the pathology of many of the contagious and infectious diseases of man and the lower animals.

The conclusions arrived at by the Committee are that braxy and louping-ill form two of a group of specific bacterial diseases; that there is some amount of similarity in the symptoms of certain

diseases of this group; that this similarity frequently results in errors of identification; that the primary habitat of the bacteria which is their cause is, in the whole of them, the alimentary canal; that at certain seasons of the year the blood of the sheep is unable to resist the invasion of these bacteria, and death ensues; that at other seasons the blood of the sheep destroys these bacteria, and at such times the animal is proof against them; that the germs of this group of diseases are picked up by the animal when feeding; that the fatal effect of these germs in the case of louping-ill and braxy may be prevented by drenching with a culture of the respective bacilli during the period of resistance; that if the drenching be done at the wrong time of year, viz., during a period of susceptibility, death may follow as a result in a certain number.

The Committee referred to suggest that the foregoing facts be made widely known in the infected districts; that facilities be given for the universal drenching of sheep against louping-ill and braxy, further opportunities should be granted for the investigation of these and the methods of preventing them.

#### Foot Rot.

There are few things more troublesome to the owner of sheep than foot rot, though it is doubt-

less more prevalent than it would be if more active steps were taken to check it when once it appears; a single outbreak should be attended to at once, and the sheep be isolated; but to prevent further cases, the whole flock should at once be walked through an arsenic or carbolic acid bath.

The neglect to pare the feet, causing abrasions which admit the germs, is frequently the initial cause of an outbreak. The knife should always be at work, so that the feet are kept in proper shape. One very important point often misses recognition, and that is that when dressing and paring the feet of infected sheep, the parings are allowed to fall on to the ground and leave the infection there. There can scarcely be a surer way of keeping the disease on the land. Although it is sometimes rather inconvenient, the paring ought to be done on a cloth, so that the diseased parts may be collected and burned.

In buying in sheep it is not merely a matter that the sheep are sound at the moment—the condition of the hoof is of considerable importance. If the foot has been contorted through neglect in the first instance, and made unduly hard by the use of too strong acid dressings subsequently, there is every probability that trouble will come again.

Whether a buyer regards this point or not, there is no doubt that a lot of sheep with naturally formed

hoofs, and no traces of previous rot, are worth a substantial sum more than those which through bad treatment are likely to cause the loss which foot rot always occasions.

#### GARGET.

Among the many causes to which garget is attributed are:—Exposure to wet and cold, damp and filth where the animals lie down, hardness and dryness of the soil of the pasture giving rise to bruising, butting from the head of the sucking lamb, want of proper attention or unskilful management of the ewes when the lambs are weaned, the removal of one twin lamb after the other has become accustomed to suck only one side of the udder, so that milk accumulates in the undrawn section, and soreness of the teats resulting in refusal of the ewe to let the lamb suck.

Too much milk causing “caking” of the udder, which in its turn causes the lamb to wound the teats, or anything that gives rise to painful scratches, chaps, or cracks, is, I believe, a fertile cause of garget, because it leads to retention of the milk.

Another thing associated with cold as a cause, and one that operates especially in early lambing flocks or those kept in exposed situations, is the absence of the tail and the close clipping of the

wool about the udder and genitals prior to lambing. This "under-locking" or "clatting" is all very well as a routine sanitary measure where ewes are on roots or scouring lands, and perhaps has some influence in preventing "wool-ball" in the lambs if it be true that they get the wool from the neighbourhood of the ewe's udder in sucking; but this trimming up should not be so drastic as to leave the udder, which in its active state is necessarily predisposed to congestion and inflammation, exposed to cold and searching east winds. Different cases, of course, run different courses, and the treatment ought to be adapted to the special indications of the case as presented at the moment it is discovered. It may terminate in resolution, i.e., complete restoration, which is, unfortunately, rare; induration, which is common; suppuration, or the formation of an abscess; or gangrene, or death of the part, and the sloughing out of the "quarter," if that is the correct term to apply to a gland that in the ewe is longitudinally divided.

It is when taken in the first stage that treatment is likely to be most successful, but, in spite of what clever people say, there is really no remedy, or line of treatment, that can be fairly described as a "cure."

As soon as the ewe is observed to refuse to let the lamb suck, or to appear uneasy, she should

be examined. If there is evidence of congestion, the gland should be fomented, and emptied, either by hand or by forcing the ewe to let the lamb suck. After fomentation the udder should be rubbed with camphor ointment or liniment, which is the most useful deobstruent we have. Cracked or sore teats should have prompt attention.

A useful ointment to keep on hand for bad udders is: Camphor, 2 drachms; mercurial ointment, 2 drachms; marsh mallow or elder flower ointment, 2 oz. If a fluid is preferred, a mixture of equal parts of spirit of camphor and compound soap liniment is most useful. If the udder is found hot, swollen, and painful, it is best to remove the lamb, get the ewe under shelter, give her a spare dry diet, and assiduously foment and clear out the gland several times a day. A saline purge, in the shape of a full dose of Epsom salts and nitre, should be given in warm water or gruel, and  $\frac{1}{2}$  to 1 drachm of carbonate of soda twice a day in the same way.

When the gland becomes indurated, or assumes a stony hardness, there is very little hope of a restoration to usefulness. It should be rubbed with the camphor ointment, and attended to until there is no fear of abscess, and then the ewe should be fattened. Every ewe that has suffered with her udder should be sent to the butcher, as there is pretty sure to be trouble if set to lamb again.



Many cases occur among ewes purchased as "drafts" from big flocks.

If abscess threatens fomentation or poulticing should be continued, and pus evacuated when ripe. A linseed poultice well sprinkled with finely-powdered charcoal should be applied to the suppurating gland, and later on injections into the abscess cavity of carbolic acid lotion, or a dilute dressing of one of the several alkaline solutions of coal tar are useful.

Gangrene or death of the part always ends in sloughing out of the dead portion. It is a long and stinking business, and many ewes, especially if in poor condition at the start, succumb either to the drain on the system or from general blood poisoning from the absorption of septic material.

The best thing is removal of the gangrenous portion, but this requires some amount of skill and experience, and generally it is allowed to slough out by lapse of time.

Disinfectants should be used freely, and the strength of the patient maintained by nourishing, easily digested food and tonic medicines.

#### HUSK OR HOOSE.

The parasites, which are the cause of husk or hoose, are thread-like worms technically known

as Strongyles—*Strongylus filaria* being the principal variety affecting the sheep—are not confined to the “throat,” or even to the upper air passages, but, in bad cases at least, are found in large numbers in even the remotest ramifications of the bronchial tubes.

The irritation set up by the parasites in the air passages is the cause of the fits of most distressing and almost continual coughing and difficulty in breathing, and this coughing, which gives the animal no rest, undermines the strength of the lambs, and is mainly responsible for the emaciation. In bad or neglected cases progressive anæmia, denoted by marked pallor of the visible mucous membranes, is always a feature of “husk,” and the animal becomes thinner and weaker, until at length dysenteric purging and dropsy set in as antecedents to death from exhaustion.

Older sheep harbour bronchial and lung strongyles as well as lambs, and they are often found after death in fat sheep that appeared to suffer nothing from their presence; but the reason they do not suffer is because they are stronger in constitution and better able to stand up against the ravages of the worms. It is young, weakly animals, that are the victims of “husk,” and in proportion as their strength is kept up, and they are provided

with dry, nourishing food, so are their chances of survival increased.

The remedy is to kill the worms in the air passages. There are several ways of doing this—by inhalation and fumigation—that is, by causing the lambs to inhale the fumes of noxious gases which are fatal to the parasites, or by injecting directly into the windpipe certain drugs which destroy the worms in the air passages. The latter plan is the most successful in intratracheal injection, but is preferably carried out by the local veterinary surgeon.

#### LIVER FLUKE OR ROT.

Liver fluke, or what is commonly termed rot, is a disease of low lands, marshy grounds, and wet seasons, and is caused by the presence in the liver of the fluke. In some cases the progress of the disease is very rapid, but usually slow. Bearing in mind that the necessary intermediate host of the fluke is a fresh water mollusc, the treatment becomes a somewhat simple matter. What is necessary is the turning of the fresh water into salt. Common salt to the amount of 5 cwt. to the acre has been found most beneficial, but attention should rather be paid to prevention than to cure.

Unsound pastures should be drained, and, at any rate for a time, put to other purposes. During wet

seasons, when the disease makes its appearance on ordinarily sound pastures, the natural food should be supplemented by cake, corn, and such nutritious diet, mixed with common salt and sulphate of iron, to the amount of half a drachm for each sheep.

Little could be done for sheep already affected. Those but little affected should be fattened and slaughtered, removing them, of course, from the low-lying ground to hill pastures.

#### NAVEL ILL AND JOINT ILL.

To some the association between "navel-ill" and "joint-ill" may not be very apparent, but "joint-ill"—epizootic arthritis—is a disease due to septic organisms which enter the system through the umbilicus, which at birth is, for all practical purposes, an open wound.

Instead of being two distinct diseases, as is popularly supposed, "navel-ill" and "joint-ill" are, for all practical purposes, one—the swollen, and often suppurating, condition of the joints proceeding originally from septic inflammation of the umbilicus.

"Navel-ill" has been variously attributed to in-breeding—a scrofulous diathesis—which is a high-sounding term that covers a deal of ignorance—to improper feeding of the ewe, to cold, damp, exposure to inclement weather, soiled litter, dirty

surroundings, and insanitary attendants. These have their influence, either by predisposing to attack or conveying the infection, but there is now no doubt that an organism is responsible, and that it gains access through the unclosed navel.

Unsanitary surroundings favour outbreaks, but the important factor is the infecting element, and there is no "navel-ill" or "joint-ill" if access of the specific organism to the umbilical vessels can be prevented. When the remains of the umbilical cord are once fairly dried and shrivelled, "navel-ill" and "joint-ill" are very rarely met with.

The first local symptoms in "navel-ill"—technically omphalitis, omphala phlebitis, or inflammation of the umbilicus—are often overlooked, and the obvious constitutional disturbance commonly mistaken for a "chill," to which the febrile character of the complaint may point. Under normal conditions the remains of the umbilical cord rapidly dry up, but when inflamed it appears moist, projects from the abdomen, and has a peculiar tap-like appearance, from which a small quantity of thin, unhealthy, purulent-looking fluid is discharged. The little animal is dull, lies about, does not attempt to suck, and soon shows great prostration.

When the case is acute and the systemic disturbance great, the subject of "navel-ill" may die within two or three days of its first being noticed

amiss, a fatal termination taking place before the disease extends to the joints.

These are the cases in which the disease exists as septic inflammation of the umbilicus only, and which cause "navel-ill" and "joint-ill" to be commonly regarded by flock owners and their servants as separate and distinct diseases, and leads them to overlook the open and inflamed navel as the point of entry, or, perhaps, more correctly, the point of departure, when swelling and suppuration of the joints are the most prominent symptoms. Why, when septic matter is carried away in the circulation from the umbilicus in cases of purulent omphalitis it settles more particularly in the joints, and especially the hock and knee joints, we cannot say, but chronic morbid conditions of a pyæmic character are sometimes set up in other parts besides the articulations, and many deaths of young animals from obscure causes would be traceable to "navel-ill" if intelligent post-mortem examinations were made. Another thing we cannot account for, but which we have often noted, is that the large majority of cases of "joint-ill" occur in males.

Such small success attends treatment, that prevention is of the utmost importance, for the affection is a most serious one in a lambing flock. Although there is no doubt that septic infection is the cause

of the disease, there is equally no doubt that anything which during pregnancy debilitates the system of the mother predisposes to it.

The occurrence of "navel-ill" and "joint-ill" year after year amongst newly-born animals on certain farms suggests that the specific organism causing the disease lingers about folds and buildings, and the possibility of soil infection must not be forgotten. Tying the umbilical cord at birth, that is, putting on a ligature dipped in an antiseptic so as to artificially close the vessels and thus prevent the entry of septic matter, has its advocates, but the ligature material, and the person applying it, must be aseptic, or it may cause, instead of prevent, the trouble.

Dr. Fleming says:—"Inflammation of the joints, especially of the hocks, has often been accidentally produced by the inflammation excited through ligaturing the umbilical cord."

Dr. Fleming recommends that, as a means of obviating the danger of septic infection, the extremity of the umbilical cord be dressed immediately after birth with a concentrated solution of carbolic acid, which destroys germs, keeps away flies, and renders putrid matter innocuous, while it quickly shrivels up the cord itself.

A free use of antiseptics can be recommended in all parturient cases, no matter what the class of

animal, but they are especially desirable in the lambing pen. Smith ("Veterinary Hygiene") says: "The affection should be at once met by the lambing pen being broken up and a fresh site found, isolation of the affected, destruction of the carcasses by fire or by deep burial, and the adoption of the group system, a separate attendant being told off to each group of ewes and lambs. Cleanliness of the ground must be observed, the frequent use of disinfectants on the floor of the lambing pen is essential, and all soiled litter must be destroyed by fire.

The shepherd is the most important person to look to and disinfect ; overall clothing should be provided, and a rigid disinfection of hands and nails made under competent supervision. This should be carried out with hot water, soft soap, and a scrubbing-brush, repeated until the dirt is apparently gone ; then followed by washing in alcohol and ether, finally scrubbing in bichloride of mercury (1-500). If the disease continues the shepherd must suspend operation."

These directions read very simple on paper, and there is no doubt but that the disease can be got rid of by surgical cleanliness, but it is difficult to insure this where every facility exists, and it is practically impossible on the farm or in the field,



and with passively obstructive or actively opposing men who are not generally ardent sanitarians, and fail to appreciate the necessity for so much washing and scrubbing. The only thing is to secure the best possible attention to hygiene under the circumstances.

#### NOSTRIL FLY.

During hot weather the nostril fly is likely to cause trouble. In respect to the nervousness with which sheep regard this fly, a comparison may be made with the botfly in cattle, causing them to gad; but instead of gadding madly anywhere, the sheep huddle together and try to escape the fly by this means, keeping their heads close to the ground.

Although actual harm comes later by the irritation caused by the maggots passing up the nostrils and remaining in the sinuses, there is no doubt from the anxiety of the sheep that they lose flesh, for no animal in a state of anxious unrest thrives as it should.

The common method of placing a piece of rock salt behind a board through which a hole is bored, making a hole a trifle smaller than the muzzle, and lining the hole with tar, so that the nostrils get a coating of tar, is an effective one, as the fly will not lay its eggs in or about tar. For the comfort and well-being of the sheep this should be done as soon as there is any sign of this fly being about.

## SHEEP SCAB.

Sheep-scab is a contagious disease ; and is due to the presence of a parasite, about the same size as the cheese mite, which clings to the wool and wounds the skin of the sheep with its pointed mouth in its search for food. This parasite produces intense irritation of the skin ; and the sheep, by biting, scratching, and rubbing, attempts to relieve the itching and thus injures its fleece and skin.

Scab is a Scheduled Disease under the Contagious Diseases Animals Act, and its occurrence must be reported to the police, who will communicate with the Board of Agriculture, who will take the matter in hand.

## "STURDY" OR "GID."

This strangely-named condition, technically hydatido-cephalus, or hydatid on the brain, is one of the most important and interesting of ovine disorders. It is known in different districts under a variety of other names, more or less expressive of principal symptom exhibited, and losses on account of it are common, but the notions held by the sheep-owner and the shepherd are still somewhat hazy, in spite of the fact that its pathology has been satisfactorily worked out, and the life history of the parasite causing it elucidated beyond dispute.

The disease has been recognised from very ancient times, and the quaint and crude ideas entertained as to its nature form an interesting study, but it is now demonstrated to be due to the lodgment and development in the brain of the affected animal of the cystic form of the *tænia cœnurus*, a tapeworm of the dog. The connection between a tapeworm, with its great length and numerous segments, and its scolex as seen in the brain of ruminants, looks, so far as appearances go, so wildly improbable that those not tolerably well acquainted with the peculiar developments of parasitic life can hardly credit it, and perhaps it is not wonderful that there are still some who cannot swallow the statement that "gid" in sheep and infestation of the dog with one of its several species of tapeworms are inseparably connected.

Both experiment and experience have, however, conclusively shown its truth, and there is not the slightest room for doubt or difference of opinion about the matter. In one experiment, the fourth part of an hydatid removed from the brain of a sheep given to a dog, led to the development in the animal of 190 tapeworms. Experiments in the opposite direction, that is, of inducing "gid" in sheep and calves, have been equally conclusive, and by giving proglottides of the *cœnurus* tapeworm to thirty-nine sheep and two calves, twenty-two of

them became affected. The seeds of the disease, then, are derived from the dog, often from the faithful guardian of the flock himself, and the chances of sheep picking up the eggs of the tapeworm are enormous, because the segments, each containing many hundreds of eggs, are only liberated a few at a time, and may be deposited in many different parts of a field or farm.

The first symptoms exhibited, at least the first marked symptoms, are general dullness and an appearance of stupidity, all the functions being performed in a listless, imperfect, or semi-conscious manner. As the cyst or cysts, for one sheep may have several, develop in the cranium the brain is pressed upon, and the nervous disturbance becomes more pronounced, the behaviour of the animal in the matter of turning or carrying its head varying according to the exact part of the brain pressed upon by the parasite. Even before active brain symptoms set in, the sheep becomes weak and emaciated, and with the progress of the attack, condition becomes still further impaired. The sheep keeps apart from the flock, and every movement shows that the power of control is lost. The sound of running water is said to possess a special attraction for them, and it is certainly not uncommon for the affected sheep to stand looking at water in a ditch or brook until it falls in.

The means of cure of "gid," other than by an operation for the removal of the cyst by trephining the skull, if we accept the prolonged application of ice bags to the head, are nil, and all the measures that have been tried have proved useless. With reference to the use of ice, it has been claimed that good results have been obtained from it, but it cannot be looked upon as a practicable and paying method of treatment for general purposes.

The operation known as trephining consists in removing a piece of the skull immediately over the spot where the hydatid is supposed to be located, and extracting it through the opening so made. This method is not to be despised, for, in expert hands, the operation is attended with a fair measure of success. It need hardly be said that a description, however detailed, would not be sufficient to teach the tyro how to perform the operation, but North-country sheep-farmers are, many of them, adepts at it on account of the experience gained by practice.

The means of prevention lie in keeping as few dogs about the place as possible, and those that are necessary for use, free from worms by periodical dosing with vermifuges, of which areca nut is an example. The dogs of the sporting tenant, and the trespassing cur, have, however, to be

reckoned with, and one way of destroying ova deposited on the pastures is by the free use of salt, lime, and soot as top dressings. Hydatids—"bladders," as they are popularly called—removed from the heads of "giddy" sheep, whether by operation or after death, should be carefully destroyed, so that they cannot be consumed by the dog.

#### TAPEWORM.

Sheep are known to harbour three kinds of tapeworm—*Tænia ovilla*, *Tænia denticulata*, and *Tænia expansa*—the last-named being by far the most common, and the particular parasite causing so many deaths among young lambs infested with it. *Tænia expansa* is peculiar in that its segments are broader than they are long, and the tapeworm is one of the largest known. Many specimens are made up of the enormous number of 7,000 segments. The head is unarmed, that is, not provided with hooks, as are some tapeworms, but furnished with suckers. The worms are found in the small intestines, and are sometimes so numerous as to completely obstruct the bowel.

The life history of the parasite has not been made out. Professor Cave, F.R.C.V.S., of the Wye Agricultural College, in a recent paper read before a meeting of the National Sheep-breeders' Associa-

tion, said: "No one at present knows the life history of these destructive parasites, and although many attempts have been made to trace out the whole life cycle from the egg to the adult worm, no one has yet succeeded. From analogy, many have assumed that the parasite runs through two stages, the adult form in the intestines of the lamb, and a larval state, which will be found in the body of some small creature—an insect, snail, etc. This creature, the intermediate host, must become infected with the eggs of the tapeworm which are scattered over the pasture along with the fæces of the lamb, and the cysticerci or bladder-worms will then form in the body of the intermediate host, which must be eaten by the lamb before mature tapeworm can develop. Some authorities maintain that no intermediate host is required, and that lambs can be directly infected with tapeworms by merely swallowing the eggs or embryos." This theory, however, does not square with the life history of the many other tapeworms whose whole round of existence is known. It has been suggested, but not satisfactorily demonstrated, that the intermediary bearer is the sheep louse, an analogous case having been proved to occur in the case of a tapeworm of the dog—*Tænia cucumerina*. The eggs of this parasite pass through the body of the dog louse and flea, furnishing the peculiarity of an

animal carrying about both the tapeworm and its intermediary bearer. The possibility of a skin parasite of the sheep playing the part of intermediary bearer to its tapeworm suggests the desirability of keeping the skin and fleece clean, and paying attention to the destruction of its vermin.

When lambs are found to have lost appetite, become rapidly emaciated, and suffer from diarrhœa, a sharp look-out should be kept for segments of worms. The parasites cause pain and wasting, and predispose to other disorders. After death the intestinal canal is found filled with *tænia*. Where there is no purging there is generally convulsions, the lambs giving evidence of cerebral disturbance, and sometimes dropping dead.

As to treatment, the best, cheapest, and most popular remedy is turpentine; and cheapness has to be considered, because the bill for drugs for a flock of several hundreds soon runs into money. Some give turpentine in linseed oil, but it is decidedly advantageous to combine it with other vermifuges, of which the liquid extract of male shield fern is an example. A useful combination is equal parts of oil of turpentine, extract filcis ether, tincture of *asafœtida*, and linseed oil. The dose should vary with the breed, size, and age, but half an ounce of the mixture is an average dose, and it should be given in a small quantity of gruel, milk, or more linseed oil.



Another useful mixture is:—Oil of turpentine, 3 oz.; tincture of asafœtida,  $1\frac{1}{2}$  oz.; oil of cloves,  $1\frac{1}{2}$  drms.; linseed oil to one pint. Average dose two tablespoonfuls, the quantity being sufficient for a score of lambs. It is best to pen the lambs over night in a bare place, and to give the medicine early in the morning. The drenching should be repeated once or twice, at intervals of from four to six days, and where the flock is a small one it is policy to shut the lambs up, as this facilitates the collection of the excreta. This should always be done, and the material mixed with lime or burned, in order to secure the destruction of parasites passed.

#### DIARRHŒA OR DYSENTRY.

Diarrhœa or dysentery is very exhausting to all animals, and its treatment will, to a large extent, depend upon the cause. It is often advisable to administer an aperient in the shape of castor oil or Epsom salts, with a view to removing the irritant, but in some conditions such cause would be highly injurious.

A good purgative for such purposes would be Epsom salts 3 oz., ground ginger 1 drachm, given in gruel, while a useful diarrhœa cordial may be made as follows:—Prepared chalk, 2 oz.; powdered catechu, 2 oz.; powdered ginger,  $\frac{1}{2}$  oz.; powdered opium, 1 drachm; peppermint water,

1 pint. Dose,  $\frac{1}{2}$  oz. A repeated dose of this may be given, and the sheep should be fed upon dry nourishing food, whilst a change of pasture is also advisable.

#### STRAINING AFTER LAMBING.

In cases where the ewe is strained after lambing, two tablespoonfuls of a mixture of two parts of best carbolic acid and seven parts of gallipoli olive oil may be injected into the uterus. In cases of a less severe character carbolic oil of half this strength (1 to 15) may be used with advantage.

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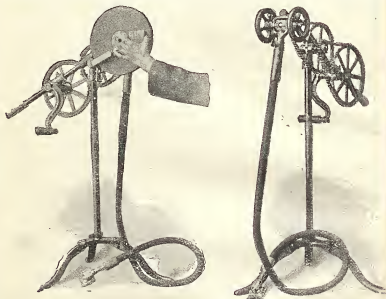
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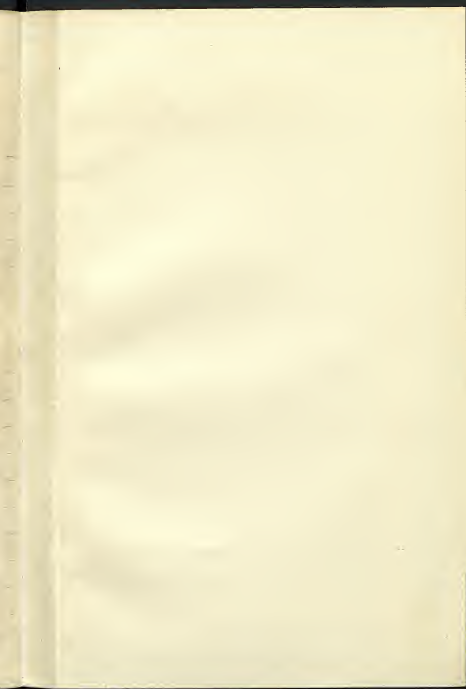
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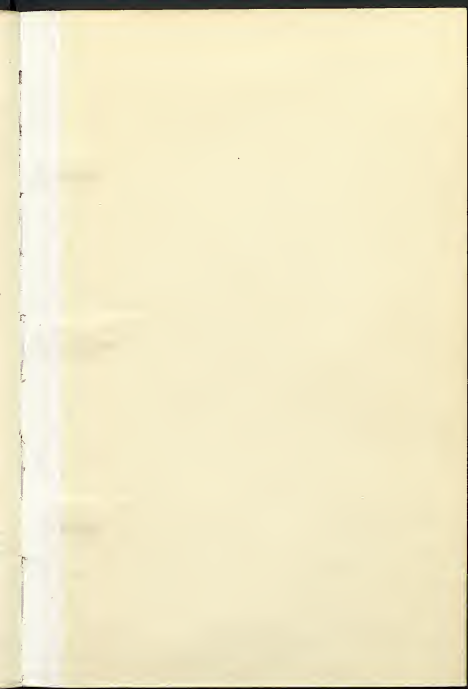
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